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PROCEEDINGS.

SEVENTH MEETING, Thursday, March 17, 1859. Archibald Russell, Esq., 2nd Vice President, in the chair.

The following gentlemen were elected members of the Society:

Samuel M. Barlow, William Young, James T. Brady, John R. Brady, Thaddeus Lane, Nathaniel Jarvis, George Lorillard, M. D., William M. Pritchard, Charles A. Rapallo, Sidney Brooks, Edward Bell, Henry S. Sanford, Abraham M. Cozzens, Joseph Blunt, Andrew Boardman, Richard O'Gorman, John D. Burchard, Peter B. Porter, Henry Hilton, A. W. Clason, Alexander T. Stewart, Edward Peltz (of New Jersey), Gulian Verplanck, Charles Gould, Richard S. Willis, George H. Purser, Rev. Sullivan H. Weston, Thos. Ward, William Judson, Henry Clark, John E. Burrell, Jeremiah Laroque, Paschal W. Turney, William Perris, John C. Devereux, Mathew Bird, John D. Chute, Edward P. Beach, John F. Trow, William B. Taylor.

The Hon. John R. Bartlett, (late Superintendent of the Mexican Boundary Commission) Secretary of the State of Rhode Island, and Vice President of the "American Ethnological Society," was elected a "Corresponding Member."

The annual address was then read by the Rev. Joseph P. Thompson, D.D., 3rd Vice President of the Society.

On motion of Marshall Lefferts, Esq., the thanks of the Society were tendered to the Rev. Dr. Thompson for his address, and a copy thereof requested for the Society's Archives.

Adjourned.

EIGHTH MEETING, Thursday, March 24th, 1859. Archibald Russell, 2d Vice President, in the chair.

John Jay, Esq., read a paper prepared by David Olyphant King, Esq., of Rhode Island, in relation to his "*Visit to, and Explorations and Discoveries in, Siam and Cambodia.*"

The reading of this paper (which was accompanied by a manuscript map of the region explored), was followed by a discussion, in which Mr. Jay, Judge Daly, Mr. Folsom, Mr. Prime and Rev. Dr. Thompson took part.

On motion, a vote of thanks was tendered, to Mr. King for his communication, and the paper ordered to be deposited in the Society's Archives.

Dr. J. C. Hepburn, Dr. D. B. Bradley, now employed in the missionary service in the East, and Townsend Harris, Esq., U. S. Consul in Japan, were proposed, and on suspension of the rules, elected Corresponding Members of the Society.

Mr. Jay read a letter from Lieut. John K. Duer, U. S. Navy, communicating to the Society a series of "Barometric and Thermometric observations at sea, during a voyage from China to the United States by way of Japan,

the Sandwich Islands, and Cape Horn," which, taken in connection with a previous communication, complete a set of observations around the world.

Mr. Jay also read a letter from Gideon Nye, Esq., U. S. Consul at Macao, accompanied by several volumes as a donation to the Society's Library.

The thanks of the Society were voted to Lieut. Duer and Mr. Nye for their contributions, and their correspondence ordered to be deposited in the Society's Archives.

Adjourned.

DEPARTMENT OF GEOGRAPHY.

THE VALUE OF GEOGRAPHY TO THE SCHOLAR, THE MERCHANT, AND THE PHILANTHROPIST.*

MR. PRESIDENT AND GENTLEMEN OF THE AM. GEO. AND STAT. SOCIETY:—

It is a matter of regret to all—and to none more than myself—that at a time when Egypt, South America, and Japan are enlisting the diplomacy and the commerce of Christendom in combined and persistent efforts to render their material and productive resources more available to mankind, that universal scholar who has explored alike the Monuments of Egypt and the Antiquities of Peru, who has given shape to the unwritten legends of this western continent, and who launched Commodore Perry, fresh from the piratical seas of the Great Nippon, upon the more adventurous sea of literature, has chosen to occupy in silence the chair he so much honors, instead of instructing us with his wisdom and animating us by his eloquence.† For myself, in essaying to discourse of geography as a science, in its attractions for literary men, in its benefits to commerce, in its relations to missionary and philanthropic enterprise, I feel oppressed with the magnitude of the theme. For how can one, whose mind is pre-occupied with the relations of earth to heaven, keep pace with the progress of any purely physical science? And yet, can one who would fitly serve mankind in their higher interests, dispense with the most thorough and minute knowledge of man in his present abode? This science of geography, once regarded as a mere matter of dry but necessary information, is now seen to have vital relations to Man in his physical, mental, social, historical and moral development; so that in seeking to perfect his spiritual life, you cannot separate him from the physical world in which he lives. Indeed, Milton deemed it not unworthy of Michael the Archangel, to give the father of the race a lesson in geography from the map of the world, before unfolding to him the sublime but awful vision of his descendants in their fall:

> "It was a hill,
> Of Paradise the highest, from whose top
> The hemisphere of earth, in clearest ken,
> Stretch'd out to th' amplest reach of prospect lay."*

And Homer brings Minerva from the abode of the gods to recall to Ulysses the features of his own country, when restored to it after his wanderings through known and unknown seas.

> "Behold the port of Phorcys! fenced around.
> Behold where Neritus the clouds divides,
> And shakes the waving forests on his sides;
> So spake the goddess; and the prospect cleared,
> The mists dispersed, and all the coast appeared."†

But such has been the progress of our science, that the schoolboy of to-day has a wider field of knowledge open before him in his class-book of geography, than had Minerva upon the island of Ithaca, or Michael from the loftiest summit of middle Asia.

When Dr. Johnson was past seventy years of age, he talked one day with much animation of traveling into distant countries; arguing "that the mind was enlarged by it, and that a certain dignity of character was derived from it. He had then an enthusiastic desire to visit the Wall of China." Boswell, of course, echoed the idea, and said that he himself would go and see the Wall of China, but for the duty of caring for

* The Annual Address delivered March 17th, 1859, by the Rev. Joseph P. Thompson, D.D., Vice President of the Society.

† Rev. Francis Hawks, D.D., L.L.D., author of "Egypt and its Monuments," "Antiquities of Peru," "Narrative of Com. Perry's Expedition," &c.

* Par. Lost, B XI

† Odyssey, B. XIII.

his children. "Sir," said Johnson, "by doing so, you would do what would be of importance in raising your children to eminence. There would be a luster reflected upon them from your spirit of curiosity. They would be at all times regarded as the children of a man who had gone to view the Wall of China. I am serious, sir."

Now, who would cross the street to see a man who had been to view the Wall of China, much less to see his children? Why, sir, you and I may yet visit the Celestial Empire during the summer recess, when the respected representatives of Oregon and Arizona shall have satisfied us as to the shortest and safest route across the continent. "I, too, am serious, sir."

Already within our life-time, geography has risen to the dignity not only of a science, but of a science among sciences; so that while Milton, in his time, complained that "the writers of geography, though some of them are exact enough in setting down longitudes and latitudes, yet in those other relations of manners, religion, government, and such like, accounted geographical, have for the most part missed their proportions," the age that has produced a Humboldt and a Ritter—the *Kosmos* and the *Erdkunde*—has learned to comprehend all mundane facts and sciences within the sphere of geography; and foreign accents blending with our own in the unity of race, are teaching us also the organic unity of system in "the Earth of Man."* We have outgrown that literal definition of geography which confines it to a description of the superficial aspect of the earth itself; and we are prepared to concede the broadest claims of Strabo for his favorite science —that "it can be fitly approached only by one acquainted with human and divine things—since in addition to its vast importance in regard to social life, and the art of government, geography unfolds to us the celestial phenomena, acquaints us with the occupants of land and ocean, and the vegetation, fruits, and peculiarities of the various quarters of the earth, a knowledge of which marks him who cultivates it as one earnest in the great problem of life and happiness."

In the brief hints which the time and occasion will permit, I shall advert to the relations of geography to the Literature of the past, its present and prospective benefits to Commerce, and its service to that Philanthropic Enterprise which is the boast of our age.

Among the marvels of modern science—though some are more striking in a physical aspect—I know of none more wonderful or more serviceable to mankind, than the illustration and confirmation which geography has furnished to the oldest books of History, of Poetry, and of Religion. Within our own generation the researches of geography have so far verified the local and topographical allusions and descriptions of Herodotus, Homer, and Moses, that these alone—apart from historical and philological criticism—would fully identify these fathers of secular and sacred literature with the scenes and times in which they lived.

The reputation of Herodotus has long vibrated between the terms "Father of History" and "Father of lies." Later criticism, however, has settled down upon the conclusion that Herodotus was a true historian, faithful and accurate within the limits of his personal knowledge, but too credulous in recording upon doubtful authority what lay beyond his own observation;—that what is fabulous or questionable in his narrative was not invented by him to enliven the story, but was reported by him in good faith from ignorant or ingenious informants. The travels of Herodotus extended over 1,700 miles from east to west, and nearly the same distance from north to south. In Asia he visited Assyria, Babylon and Susa, Asia Minor and Syria; in Africa, the whole of Egypt to its extreme limits, and the coast as far as Cyrene; in Europe, Greece proper, Scythia and Thrace, and the principal islands of the Levant. His journeys were made leisurely, and as a scholar he commonly had access to the best sources of information. Where he is defective, it is through ignorance or erroneous

* Prof. Arnold Guyot.

report, rather than through fancy or intentional misrepresentation. The discoveries of the present century in Egypt, Assyria, Babylon, and Greece—the identification of ruins and monuments—the deciphering of hieroglyphics and cuneiform inscriptions—have gone to establish the substantial accuracy of the first Greek historian.

But that which, more than any other single fact, confirms and illustrates Herodotus, is the general marked correspondence of his geography with the face of nature in the route of his own travels. Here he is full even to minuteness, and, considering his advantages, wonderfully accurate; but beyond these limits, he was dependent upon tradition, the reports of travelers and mariners, and the imperfect geography of his predecessors in this department—especially of Hecatæus and Aristeas. That he used these sources with caution, however, is evident from the disparaging tone with which he speaks of the maps in use in his day. "For my part," he says, "I cannot but laugh when I see numbers of persons drawing maps of the world without having any reason to guide them; making, as they do, the ocean-stream to run all round the earth, and the earth itself to be an exact circle, as if described by a pair of compasses, with Europe and Asia just of the same size. The truth in this matter," he adds, "I will now proceed to explain in a very few words, making it clear what the real size of each region is, and what shape should be given them."* Certainly the configuration of the earth, as conceived by Herodotus, was a great improvement upon the idea of Homer, whom the historian followed so ardently in his general views.

The incredulity with which Herodotus receives the story of the circumnavigation of Africa by the Phenicians, goes to confirm his general trustworthiness; while we owe to his record of what he regarded as fabulous, the most minute and truthful account of a maritime discovery made centuries before Vasco de Gama.

* B. IV, 36. Rawlinson's Ed.

Upon the whole, there seems no reason to dissent from the conclusion of Rawlinson touching the geography of Herodotus; that "his accounts of countries are, in the great majority of cases, drawn from his own experience, and are full or scanty according to the time he had spent in the countries, in making acquaintance with their general character and special phenomena. Where he has not traveled himself, he trusts to the reports of others; but only, to all appearance, of *eye-witnesses*. If in any case he gives mere rumors which have come to him at second-hand, he is careful to distinguish them from his ordinary statements and descriptions."*

In this view there is a two-fold relation between the science of geography and this ancient book of historical and descriptive travel. While on the one hand we verify the book for substance by means of those geographical features which are permanent, on the other hand we learn from Herodotus the extent of the known world in his time, and the boundaries, as then existing, between civilization and barbarism. We trace upon his map the lines of commerce and of migration radiating from western Asia, following the rivers or seeking the sea from the Indus to Tartessus. Comparing his minute descriptions with the present face of things, we learn also what changes the physical geography of certain districts has undergone in 2,500 years. This is particularly with respect to the Delta of the Nile. The maps of the Delta, as given for example by Schlieden, after Herodotus, Strabo, and Ptolemæus, with special reference to the eastern mouths of the Nile, are a valuable contribution to geology, and have an immediate bearing upon the project of Lesseps for re-opening the connection between the Red Sea and the Mediterranean. Thus, in every point of view, the scholar who would appreciate Herodotus must understand geography as well as Greek. Indeed, only so far as we can assure ourselves of his veracity and accuracy, is he of real value to this age.

In passing from Herodotus to Homer, we

* Introduction, Vol. I.

feel at once the transition from History to Poetry; and are met at the outset with the inquiry whether the poet *had* a geography of fact at the basis of his great epic and romance; whether there was an Ilium of Priam before the Troja or *Ilium Vetus* of classical history; and whether the voyage of Ulysses was to islands now visited by the mariner, or to fairy isles of the poet's own creation. It may help us to answer this preliminary question if we compare the epic poet of Greece with his only two peers, in English and Italian verse. When Milton boldly launches into the infinite abysses above and beneath, we do not think of locality, but strong and safe under his lead, we follow "the broad and beaten way" he paves over the "deep tract of hell," or mount to "the empyrean,"

> "Rapt in a chariot drawn by fiery steeds."

We ask for no chart of the regions of the supernatural; but when he maps out for Adam the future empires of his descendants from Cambalu to El Dorado, we feel that in the prolonged and minute description, the poet has exhausted his own knowledge of our globe; so that in the eleventh book of Paradise Lost we have the known geography of Milton's time. The heathen mythology wrought into his first book is located according to its national sources and physical boundaries; while his allusions to Biblical Geography are sometimes minutely exact, as this:

> "From Panеas, the fount of Jordan's flood,
> To Beersaba, where the Holy Land
> Borders on Egypt and the Arabian shore."*

While, therefore, the machinery of his epic moves beyond all geographical boundaries, yet to understand and enjoy the copious references of Milton to human history, one must be well versed in geography and archæology, since the poet deals with these as substantive realities.

As for Dante, a fine critic† has remarked, "with what complex precision, as a poetical architect, he has actually, for the purposes of his work, built a universe of Hell, Purgatory, and Paradise. Every line of his poem has a determinate relation to a certain point in space, fixed in his own mind; but whether every such point be fixed or not in nature, is no more material, than if it were simply to be determined by axes of co-ordinates." Though the opening vision of the poet comes upon him in a gloomy wood, this is but a tangible starting point for that ærial journey which he pursues through circle after circle of the outlying spirit-world. Yet even in that world the spirits of Dante recall the topography of this, especially of that Italy which was to him the scene of his intensest love, and hope, and wo. The poem can be interpreted only in the light of the geographical and political divisions of Italy in the thirteenth century.

But while Milton and Dante open their epics in the spiritual world, the one descending at once into Chaos, the other into the Inferno, Homer begins with human deeds and earthly scenes;—the wrath of Achilles, and the mustering of hostile fleets and armies. He pictures the plain of Troy; the city of its surroundings; Mount Ida with its fountains and forests, and the rivers that flow from it into the sea—the Rhesus, the Rhodius, the Granicus, the divine Scamander; the Ægean sea with its islands from Crete to Lemnos; and the swift rushing Hellespont. We cannot doubt that a real scene is before the mind of the poet, and that he describes Greece and Asia Minor, and the adjacent waters, according to his knowledge of their geography. When Homer introduces the supernatural, he does not, like Milton, challenge us to an

> "Adventurous song,
> That with no middle flight intends to soar
> Above the Aonian mount;"—

His gods are never farther off than the summits of Ida and Olympus, visible to the naked eye; and they descend in palpable forms to mingle in the strifes of men. The Iliad is rooted in the soil of Asia Minor, and its perennial flowers breathe over our material civilization, the aroma of chivalry and love from the heroic age.

It was my fortune to pass up the Dardanelles while the allied fleets were lying there, await-

* Par. Lost, B. XI.

† Mr. Gladstone.

ing the signal for the Crimean war. As our steamer halted with dispatches for the French Admiral, we witnessed the manning of the yards and the manœuvers of anticipated battle. In the back ground lay the Troad, with the range of Ida towering to the sky; and at sight of it, the armaments of England, France, and Turkey, with their flaunting drapery, faded from view, and a thousand triremes, manned with Greeks, covered the waters. Homer again called the catalogue of the commanders and all the ships; and above the roar of "the much-resounding sea" came the mellifluous voice of the oldest bard of Greece, singing the fate of Helen, and the seige of Troy. Thus to have the Iliad lifted out of the sphere of mere grammar and prosody, and prosaic criticism, brought down also from the ideal past, and fastened by its own geography to shores where fleets and armies yet gather to the fray;—to feel the pulse of a human history, and a common humanity throbbing through the verse of Homer after three thousand years, was worth a voyage from the Hudson to the Xanthus.

The story of Ulysses has in it so much of the element of romance that it is less important to verify its geographical allusions. Yet, the interest of the story is so far enhanced by transferring it from the sphere of the ideal into the actual, that one who has sat musingly beside the "bay of Ulysses" in Corfu, is almost vexed that the learned and eloquent "member for Oxford University" has transported the home of Calypso from that to some imaginary island in the Euxine. Indeed, I do not wonder that, after such violence done to their traditions, the Ionian Islands should reject all the advances of the distinguished envoy of Britain, and that Calypso, disdaining the proferred consolations of Victoria, should again lift up her despairing cry toward the Ithaca of her loved and lost Ulysses.

But while we owe this grudge to Mr. Gladstone, we would gratefully acknowledge the service he has rendered to our science in extricating from chaos the geography of the Odyssey, and projecting a map which locates and harmonizes so many of the poet's references to lands and seas. And we must believe with him that this "wild and noble romance" was an effort of the poet, shut up "within a narrow and local circle"—"to pass the horizon by strength of thought; to pierce the mist; to shape the dim, confused, and conflicting reports he could pick up, according to the best of his knowledge and belief, into land and sea; to people its habitable spots with the scanty material he could command, everywhere enlarged, made good, and adorned out of the wealth of his vigorous imagination; and to form, by effort of the brain, for the first time as far as we know in the history of our race, an idea of a certain configuration for the surface of the earth. The poet has imbedded into his imaginative scheme a multitude of real geographical physical traditions; and by means of these, upon comparing them with their proper originals, we can judge with tolerable accuracy what were the limits of human enterprise in the face of the earth in this heroic age."*

We find, then, a world embraced within the circuit of Greece Proper and Asia Minor, including also the principal islands of the Ægean and the eastern Mediterranean, the definite and intelligible scene of the major part of the actions and movements of Homer's heroes. Within these limits the poet's knowledge of locality was tolerably exact; and here we may reproduce his wars and wanderings of men, and his councils and manœuvers of the gods, upon a map constructed from his own materials. Strabo, who claims Homer as "the founder of geographical science," would extend the literal knowledge of the poet far beyond this area. But Homer's allusions to Lybia and Egypt, to the Persian gulf, the Euxine and the Caspian, are too indefinite to furnish anything more than a rude outline map of the world beyond the immediate margin of the Levant.

Where to locate the Ethiopians was the great geographical problem of Homer, as it is the great political and moral problem of our own

* Vol. 3.

generation. He found them not only in the south but also in the east and in the west, from the rising to the setting sun, and stretching round to confront the rough Cimmerians of the north,—altogether quite a mysterious and perplexing people, geographically considered. And then beyond his utmost verge of earth, the imagination of Homer, linking the fact that the known world everywhere touched upon the sea, with the fact that the Hellespont joined ocean to ocean, pictured a river-ocean flowing through "the wide-wayed sea" around the world. This conception of Homer—like the prediction of the Medea, and Strabo's conjecture of another continent lying westward in the Atlantic—is almost a poetic prophecy of that ceaseless current which bears the warmth of the South Pacific along the coast of our entire continent, which mitigates even the cold of the Arctic, and scatters upon the shores of Norway and the Hebrides the seeds of the tropics. Be that as it may, while the "wide-wayed" sea of Time shall roll, changing its configuration with the rise and fall of nations and empires, there shall flow through it a river of song which, gushing from the world's young life, shall bear to the latest posterity the Ulysses of Homer.

To the scholar who would appreciate the poet as something more than a text-book of Greek prosody, there is a necessity for a definite comprehension of both the real and the imaginary geography of the Homeric age.

As in going back almost twenty-five centuries to Herodotus, we find geography his witness and his interpreter, and in going back five hundred years further, we still find geography a palpable chain of fact linking us to Homer; So, if we shall penetrate seven centuries beyond, we shall still find geography a witness for those Hebrew records which are the oldest reliable documentary history of the world. Indeed, Moses is even more attested by its evidence than either Homer or Herodotus; for while both a poet and historian, his main function is neither poetry nor history as an art, but the record of moral and religious truth, and the revelation of divine law and promise. In making this record of Divine Providence and revelation Moses gives only those local and geographical facts which are incidental to his religious purpose. Yet, in so doing,—and all the more because of that *incidental* mention of facts and places which assumes a knowledge of these on the part of the reader,—Moses furnishes permanent data of his own authenticity. These, the geography of Egypt, Assyria, Arabia, and Palestine, enables us to test in the most satisfactory manner.

It were possible for God to have revealed to men an ethical code or a system of theology in the abstract style of Plato or of Sir William Hamilton—a system for the schools. But from the beginning, Divine revelation has been closely associated with the personal and the actual of human life and history. While the Euphrates and its cognate streams shall water the region of middle western Asia, men shall not cease to be reminded of the Eden of their great progenitor. While Ararat shall tower among the mountains of Armenia, men shall not cease to be reminded of the historical peopling of the earth by the sacred remnant borne in the Ark from the antidiluvian world. While Ur, and Haran, and Damascus, and Sichem, and Bethel, and Hebron, may be identified by living representatives or undisputed monuments, the Israelite, the Ishmaelite, and the Christian, will keep alive the memory of the Father of the Faithful amid the scenes of his eventful life. While the cauldron of the Dead Sea shall simmer with its bitter asphaltic waters, the story of Sodom and Gomorrah shall stand in letters of fire. While the Nile shall roll its fertilizing flood along the margin of the desert, the story of the plenty and the famine of Joseph's premiership, of the visit of his brethren, and the burial of his father, and the story of Moses in the ark and in the wilderness, will belong to the physical scene. While the bald granite of Sinai shall cleave the clear atmosphere of the Arabian wilderness, the eternal law of right shall speak from every crag, and echo in every vale. The Red Sea

and the Jordan divide again before the wand of the historian; and Nebo still overlooks the land of promise from Hermon and Lebanon to the Great Sea. The Bible is rooted in the soil of the earth while its mountains shall stand—is written on its surface while its rivers shall flow.

But beside this general outline correspondence of the geography of Egypt, Arabia, and Syria, with the sacred record—serving to identify the book with human scenes and history—there are particular and even minute geographical correspondences with the local allusions of the Bible, which authenticate the book beyond the most ingenious objections of a Volney or a Gibbon. The very lists of names in old Testament Geography which so perplexed our childish organs of speech, and seemed to encumber the narrative, have now become witnesses for the authenticity of the book, and the accuracy of its several writers. No geographer of ancient or modern times has passed unscathed of criticism; yet *not one geographical error has been fastened upon the sacred writers, where the text is fully settled, and the reference clearly identified;* and every new explorer of the Holy Land brings to light some new identification of ancient sites, corroborating the historical books of the Bible. Indeed, a skillful cartographer might almost construct a map of Palestine from the allotments of the tribes detailed in the book of Joshua—that most ancient record of title deeds; and the monopolist of hand-books, even while offering his excellent red-covered Guides for the East, assures us that the Bible is the best hand-book for Syria.* Not only the bolder features of the country, but the highways, the battle-fields, the fountains, the villages, are mapped out with undeviating accuracy, and by such land-marks as only one writing of things familiar could give. The very peculiarities of climate and soil are indicated by some passing remark of a writer intent upon a moral lesson.

Among the more curious results of Egyptian Archæology, is the construction, by Brugsch, of a map of Palestine, from Egyptian monumental sources; that is, the outline of Palestine being sketched from nature. Brugsch* has filled it in only with names of Hebrew towns identified upon the monuments of Egypt—thus making an Egyptian hieroglyphic map of Palestine. The result is a curious and minute confirmation of the Hebrew books of the Kings, where these interlace with Egyptian history. A similar correspondence has been traced to some extent upon Assyrian and Babylonian monuments. In short, the study of the geography of Syria is almost as important for the elucidation of the Bible, as is the collation of manuscripts for adjusting the sacred text, and the science of exegesis for a correct interpretation. Every true Biblical scholar must needs be so far a geographer. A distinguished scholar of Germany, in his recent commentaries on the books of Joshua and the Kings,† assigns as a sufficient reason for a new exposition of these historical books, the fact that Dr. Robinson's researches in Palestine had brought to light such valuable materials for the illustration of the text. It is gratifying to know that this now veteran explorer in this field, is likely, ere long, to garner the latest and best fruits of his life-long studies into a Biblical Geography which shall be worthy of its aim. Without a question, if Palestine shall ever be under a stable and liberal government long enough to admit of its thorough exploration, it will yield an unparalleled testimony to the authenticity and accuracy of the Bible. When that day comes, may so shrewd and competent an observer as the author of "the Land of the Book"‡ be there to take his notes and print them.

While geography is thus the ready handmaid of the scholar in the interpretation of ancient and valued documents, she is also the pioneer and guide of the merchant in commercial adventure. Could a people whose idea of the world is expressed by a Chinese map, ever become a commercial people? With the whole

* Mr. John Murray.

* Geog. der Nachbarlander Agypteus. † Kiel.

‡ Rev. W. M. Thomson, of Beirut.

world embraced in China, except the tiny outlying island of Britain, the celestial empire constituting the one only terrestrial continent, and this mainly inland, could there possibly be a stimulus to foreign commerce? Commerce with whom, and to what ports? From early times, indeed, China has had a coastwise commerce; but her people have hardly been characterized by the spirit of maritime adventure. But, while the geographical ideas of the Chinese, no less than their social institutions and religious prejudices, have restrained the spirit of commercial enterprise, insular Britain, invited upon every side to tempt the sea, has availed herself of all maritime discoveries to push abroad her empire of commerce till it encircles the globe. Her exploring expeditions, her commissioned travelers, her civil engineers, are pioneers of her merchants and manufacturers, opening new markets from Australia to Labrador.

The bold speculations of geographers have prepared the way for the successful adventures of commerce. It was as a navigator following the configuration of the eastern hemisphere, that Vasco de Gama opened to the commerce of western Europe a new route to the East Indies, when the Turk had gained control of the ancient channels of trade. It was the passion of Columbus for geographical knowledge, nursed by the study of maps and charts, and the information picked up from the sailors of Genoa and Lisbon, that led him forth upon the bold adventure which issued in the discovery of America. The wonderful travels of Marco Polo, then just written, had kindled a new enthusiasm for oriental discovery. The conjectures of Aristotle, Strabo, and Seneca, as to the proximity of eastern Asia to the pillars of Hercules, were made familiar to Columbus through the "Picture of the World," prepared by Cardinal Petrus, of Cambrai; and these conjectures of the earlier geography were the means of inciting the Genoese navigator to seek the Indies by a westward voyage. The ardent pursuit of geographical knowledge opened a new continent to emigration and commerce.

The explorations of Barth and Livingstone in Africa, have already directed the spirit of commercial enterprise toward the interior of that continent, and we shall yet see every navigable river of Africa enlivened by merchant fleets, more fatal to the slaver than ill-manned and sluggish navies. The interior exploration of Russia, of middle Asia, and of South America, is opening new channels for the commercial industry of nations. Every well-planned geographical expedition repays its cost to commerce a thousand fold. No science is more practical or more remunerative than this. He who understands the geography of the world—in the wide import of that term—will know the value and the wants of the markets of the world. A half-witted capitalist in an eastern city once sent a cargo of warming-pans to the West Indies, at the instance of a friend who loved a practical joke. Luckily they were put to use as molasses strainers, and proved a profitable venture; but it would hardly be safe to repeat the experiment. The ill considered kindness which forwarded to a missionary in a tropical island a life supply of beaver overcoats and felt hats, would hardly pass for commercial sagacity. Commerce must ever adjust itself to the great laws of climate and of physical distribution, which geography ascertains and reports for her guidance.

I have already hinted at the relations of geography to that spirit of Moral and Philanthropic Enterprise which makes the elevation of Humanity the crowning aim and glory of our times. We cannot dissociate the earth from man. Geographical and national insulation is a barrier to that sympathy of race which proclaims our common humanity. But Christianity overleaps that barrier with her divine commission to "go into all the world, and make disciples of all nations." Thus far the advancing periods of civilization, as both Guizot and Guyot have noted, have not succeeded each other as developments upon the same soil, but have advanced from country to country, and from continent to continent, in an order which is styled "the geographical march of history."

XUM

But that higher civilization toward which we aspire knows no boundary within the confines of the habitable globe. The spirit of geographical discovery which prompts a Franklin and a Kane to explore the frigid zone, and a Barth and an Overweg to penetrate within the tropics, summons our Christian philanthropy to visit the Esquimaux and the Ethiop with its kindly influence. We have no longer an inner and an outer geography—an inner world of seclusive civilization, an outer world of proscribed barbarism—but we find *one* earth from pole to pole, and through all the conditions of the human family a common moral nature susceptible of the same virtues and vices, the same knowledge, desires, affections, and hopes, and the same social elevation. No sooner does the geographical explorer cry "Land ho!" "a new island, a new continent is found," than Christianity exclaims, "this, too, is mine!" and forth she goes with her divine ministrations to every creature. "It was from the perusal of 'Cook's Voyages round the World,' and while employed in giving instruction to his pupils at Moulton in geography, that Mr. Carey was led to contemplate the moral and spiritual degradation of the heathen, and to form the noble design of communicating the gospel to them. When he was subsequently constrained to relinquish the school and return to manual occupation, the same idea was still uppermost. Mr. Fuller has related that, on going to his little workshop, he saw a large map suspended on the wall, composed of several sheets pasted together, in which he had entered every particular he had been able to glean relative to the natural characteristics, the population, and the religion of every country, as then known to us. While engaged in making or mending shoes, his eye was often raised from the last to the map, and his mind was employed in traversing the different regions of the globe, and musing on the condition of the various heathen tribes, and devising the means of evangelizing them."*

* Life and Times of Carey, Marshman, and Ward. London. Vol. 1, p. 9.

And so the geographical and statistical studies of a poor cobbler led to that great enterprise of the *Christian* civilization of India, which is a higher glory than all the conquests of Britain in the East.

The first exploring expedition of the United States brought accurate reports of the islands of the South Pacific and their inhabitants; those islands are already included within the domain of Christian missions. And if the next expedition to the North shall find some peopled island in the Polar Sea, it will herald the advent of that Christian philanthrophy which shall turn the Arctic Night into perpetual Day. Geography circumscribes the globe with latitude and longitude; Christianity enspheres it with light and love.

But while Christianity thus follows immediately upon geographical discovery, eager to fulfil her mission, she often anticipates both science and commerce, and by her zeal for man's highest welfare opens new domains for all material progress. The arts and manufactures of Britain will owe to a humble missionary of South Africa a debt which honorary titles and guinea testimonials can never cancel. Ritter and Humboldt acknowledge the eminent services of missionaries to geographical science.

Such, briefly sketched, is the dignity and value of the science to further which this Society is organized. We associate with geography the kindred and almost inseparable science of Statistics; not the mere accumulation of facts and figures, but the scientific classification of all the phenomena of human life and society, economical, numerical, social, political, vital, moral, and religious. Regarding these, not from Mr. Buckle's stand-point, as blind fixed forces, of which human actions are a necessary resultant, nor as being in themselves a law for man, but as themselves under law, and evidences to man of his present condition and necessities; we would derive from the statistics of nature and mankind, information and suggestions for the great ends of social and moral improvement. The field opens invitingly before us. Though the youngest *National* Society

in these departments, we find that the oldest of kindred institutions abroad have been in existence but a third of the century, and yet have taken rank with the first institutions of science, and have greatly enriched its literature with the results of their inquiry and discovery. Entering at once upon their labors, and enjoying the fruits of their successes, we have before us in our country, and upon our own continent, a field from which we should gather fruit for exchange with the whole world of science. If our national vanity makes us jealous even of foreign exploration upon this continent, our national pride, and the just and liberal enterprise of science, should lead us to perform that work for the benefit of mankind. We should demonstrate to the world that republicanism and filibusterism are not identical; and that royal patronage and hereditary wealth are not necessary for the culture of a scientific spirit. With such a field, and such a work before us, we confidently invite the co-operation of our fellow citizens. We open our rooms to the scholar, the merchant, the philanthropist, to each and all without distinction of school or sect. In seeking the advancement of this Society, we are seeking the honor of our city and country. If the day shall come when the American Geographical and Statistical Society shall occupy a building of its own, its ample halls adorned with the historical maps, and the most recent surveys, its library furnished with all that science and travel can supply in its department, and its statistical bureau with all reliable information duly classified, and freely proffered to the editor, the merchant, the manufacturer, the physician, the statesman, and the philanthropist,—they who have built the structure shall win the grateful honor of their generation, and bequeath to posterity a deathless legacy of fame.

TEXAS.

The value of taxable property in Texas has been increased as follows: In 1850 it was $53,563,671; in 1852, $80,754,094; in 1854, $126,981,617; in 1856, $161,504,026; and in 1858, $192,287,377.

GEOLOGY OF NEW JERSEY.*

The principal geological formations in New Jersey cross the State in a N. E. and S. W. direction. The rocks which are so prominent upon the upper part of New York island, and which underlie the whole of it, extend on toward the S. W., appearing on Diamond Reef, just off the Battery, then at the quarantine landing on Staten Island, and again a few miles this side of Trenton, on the Delaware, whence they extend across Pennsylvania, Delaware, and Maryland, and on farther south. The line following this range across New Jersey, divides the State into two parts, each of which possesses very marked and peculiar geological features. In studying the geology of the northern region, it may be considered as divided into three parts:

1. The primitive region, embracing its central part, which is the extension of the Highlands.

2. The region lying on the north-west, constituting what is known as the Kittatinny Valley and the Blue Mountains.

3. The S. E. border of the northern division, which is characterized by the red sand-stone as the principal rock, and the ridges of trap which traverse it in various directions.

The primary region toward the N. E. is remarkable for its mountains and for the irregular and broken character of its surface. It seems to be made up of continuous ridges, which are separated by narrow valleys. The passage across the country is laborious, and the promise for agricultural improvement extremely poor. Toward the S. W. the valleys become wider, limestone and other secondary rocks are found, and large portions are noted for their agricultural wealth.

The rock is metamorphic, usually intermingled with gneiss; its strata are highly inclined, and in almost all cases dip toward the S. E. There are several localities, where white limestone is

* Outline of remarks made by Prof. J. H. Cook, of Rutger's College, New Jersey, before the Am. Geo. and Stat. Soc., on the organization of the Section on Geology, Jan. 28, 1858.

found in connection with the gneiss. One near Mottville, is remarkable for the beautiful specimens of asbestos and serpentine, which accompany it, and the belt of white limestone, which extends along near the S. E. base of Pochneck, Mt. Pimple hill, and the lower hills beyond. This limestone is interesting to the mineralogist for the many rare and beautiful minerals found imbedded in it. It is especially remarkable for containing the only known localities of red oxyde of zinc now extensively used in the manufacture of white paint. Whether this limestone is of the same age with the gneiss, or whether it is altered from the blue limestone is a question, on which there is some difference of opinion among geologists. In several of the valleys a blue limestone is found, which, from its fossils, is evidently the Black River limestone of the New York system. Professor Rodgers advanced the opinion that it was newer than the coal formation, but from the silurian fossils found in the rocks adjacent to it, there seems good reason for placing it among the older silurian strata. The occurrence of these fossiliferous rocks in the midst of a primary region, and their lying in a highly inclined position in the valleys—indicate the powerful elevating and disturbing forces which have operated upon them. This region is rich in iron ore of an excellent quality. The ore is found over a large portion of the belt, more abundant in the central and northern parts than in the southern and western. They are, however, not continuous veins. Some of them appear upon the surface for a few feet or rods only, while others may be traced for a mile or more. The veins vary in thickness from a few inches to 60 and 70 feet, and the same vein varies in thickness in different places. In dip they conform to the rock in which they lie; and irregularities in thickness and terminations of the veins, instead of taking a vertical or any uncertain direction beneath the surface, uniformly descend toward the north-east.

It has been found by a careful examination of the structure of these veins, that the supply of ore which can be obtained from them will never cease by exhaustion—but will continue till the cost of raising it to the surface exceeds its value. It gives new interest to this region, lying as it does, at our very doors, that it offers an almost inexhaustible supply of this indispensable metal. The origin of these ores, though apparently a purely speculative question, is one which has important practical bearings, and a correct theoretical knowledge of their origin will aid much in opening and working the mines. The quality of iron made from these ores is much superior to that obtained abroad; and in quantity, according to the statement of Dr. Kitchel, capable of yielding a million of tons a year for many years to come. Dr. Kitchel advances the opinion that these mines of ore or veins, are of a sedimentary origin, like the rocks in which they are found, and that with those rocks they have since been changed in structure, appearance, and perhaps in composition. Bischof endeavors to explain the formation of magnetic iron ore by chemical action. Starting with the fact that many common rocks contain oxyde of iron, some enough to make 28 per cent. of the magnetic ore, he goes on to reason that this is a source sufficient to furnish an amount vastly beyond that found deposited in veins, and that no great stretch of imagination is needed to supply the chemical force, which would bring these disseminated particles of iron from the rock in which they are imbedded, and collect them in the veins or strata of ore.

The district lying to the north-west of the State is a broad and elevated valley lying between the Blue Mountain and the Highland ranges, extending from the New York State line on the north-east, to the Delaware on the south-west. This beautiful country is known as the Kittatinny Valley. Its rocks principally belong to the Black River and Hudson River formations of the New York survey. It is a rich agricultural and grazing district. The geological formation most prominent here is the same as in the rich grazing districts of Orange, Dutchess, Columbia, Rensselaer, Washington, Herkimer, Lewis and Jefferson counties in this

State, and it is equally noted with those counties for the quantity and quality of its dairy products. Passing from the north-west to the south-east, we come upon a region widely different. Its principal rock consists of red shale and sandstone, with intruded veins and ridges of trap traversing it in various directions. It covers nearly half the northern division of the State, and is part of the extensive formation much developed in the valley of the Connecticut river, through almost the whole of the States of Massachusetts and Connecticut; appears again on the Hudson a little below Stony Point, and extends onward south-westerly across all the States to South Carolina. The Richmond coal field is in this rock, and also the Deep River coal field of North Carolina. The precise equivalent of this formation to the rocks of Europe, has been the subject of spirited discussion among our prominent geologists, Professors Rogers, President Hitchcock, the Messrs. Redfield, Dr. Emmons and others, for a number of years. It is well known to be more recent than our coal formation. Some new fossils recently discovered by Dr. Emmons, have done much to strengthen the opinion advanced by him that they are of the age of the Trias. The difficulty of the case arose from the extreme scarcity of fossils in the rocks. In New Jersey, indistinct remains of plants are not uncommon in the red sandstone quarries, and very distinct impressions of fishes have been found at Pompton and Boonton in this rock. Fossil footmarks, so abundant and remarkable in the red stone of the Connecticut Valley, have never been found in this formation in New Jersey. Thin seams of coal have been met with in several localities, but not in quantity to encourage mining for it. The dip of this rock is toward the north-west—just the reverse of that of the formations lying on either side of it—and this circumstance has been the cause of much speculation in regard to its deposition. The belt in its broadest part is more than twenty miles wide, and has a dip from 10 to 20 deg. to the north-west. The trap rock which forms the abrupt ridges, so characteristic of the surface of this formation, has not materially disturbed the dip of the red sandstone. Slight chemical changes have been effected in some localities, by which copper or its ores have been collected at the junction of the two rocks. This is the case at Somerville and at Belleville also. This region is rich in agricultural wealth and development. It abounds in lovely scenery.

The southern division of the State is but little elevated. The Neversink and a few other hills rise to the height of nearly 350 feet; and the central elevation or backbone of the district has an average height of about 200 feet; but so gentle are the variations of surface, that one can pass entirely across the State without being conscious of any elevation whatever. The prevailing soil is more or less sandy, and the vegetation such as is peculiar to light soils. There is a total absence of extended rock formations; all the materials found even in boring wells to the depth of 300 or 400 feet, are soft and earthy in character.

Passing over the State from the N. W. to the S. E., as in the section from Trenton to Long Branch, we cross those which are successively higher, until we arrive at those which are now in process of formation. These successive strata belong to three distinct geological periods. Commencing at the N. W. border, the several strata of plastic and marly clays, of green sand and feruginous sand, belong to the cretaceous formation. The central or S. E. portions of the district belong to the quartenary system of the N. Y. geologists—drift or diluvium constituting all of it except the sand beaches along the shore, the tide marshes and a fringe of upland bordering them, which belong to the alluvial or recent formation.

CRETACEOUS FORMATION.

The lowest stratum of the cretaceous formation has much economical importance from its containing extensive beds of pure and fine potters' clay. These clays have evidently been formed from the disintegrated material of the gneiss rock, which has been before pointed out at Trenton, and in the same line at Staten Island and which, I have no doubt, once formed

a continuous ridge between these two points. At Trenton the quartz, mica, and decomposed feld-spar, or Kaolin, are found lying together upon the solid gneiss rock. In other places, as at Woodbridge and on Staten Island, the mixed materials are found and no rock near them—and in many other places the materials are found as they have been sorted by the action of the water—quartz in the condition of sand in one place—mica in another, and the Kaolin or clay, in still another. It is rare that so fine an exhibition of the origin of white clay is to be seen. The best qualities are obtained at Woodbridge, South Amboy and Trenton. The trap ridge in the centre of the State, and the heavy deposits of diluvium south of it, have buried the clays so deep that none are exposed there. An immense quantity is consumed every year in the manufacture of fire brick. Clay for the common varieties of pottery is also taken from this formation; and a small quantity is also used in the manufacture of fine porcelain. The black clay which lies immediately over the white is a stratum of no economic importance, except as it furnishes the basis for an excellent soil. It contains few, if any, animal remains in its lower bed, but trunks and branches of trees are very abundant. The upper part of this clay contains scattering grains and small masses of green sand; and shells, teeth, and other animal remains indicating that a new order of things, is found.

The succeeding formation is characterized by containing beds of a peculiar mineral substance called "*green-sand.*" It appears in small grains like gunpowder, usually some shade of green in color, and so soft that it can easily be crushed upon the thumb nail. Its composition is complex, principally a silicate of iron, aluminum, magnesia and potash. Its fertilizing power has been ascribed to the potash, and to the carbonate and phosphate of lime, which it contains. All these doubtless contribute to its value; those containing the largest per centage of phosphate of lime are most esteemed. The formation is evidently of marine origin; it is filled with the remains of such animals as inhabited the sea. Shells somewhat resembling those of the oyster are abundant. Bones of saurians, turtles and fish, are common. In all cases, however, they are of extinct species. To the theoretical geologist it is extremely interesting, as filling up an interval wanting in the geological series in Europe, and showing that instead of there being an entire destruction of animals at the close of the cretaceous period, and a new creation at the beginning of the tertiary, there was a gradual dying out of the older forms, and an equally gradual introduction of the new ones, and that while this change was going on, cretaceous and tertiary forms were living in the same waters at the same time. The green sand occupies three narrow belts on the N. W. and S. E. of the State; it is so exposed, that its advantages are experienced over a belt of country 20 miles wide and 90 miles long. The whole formation appears to have been elevated to its present height by some force which was very uniform in its action. Not the slightest disturbance is to be perceived, and yet it must have been thus elevated, for its fossils are evidently of marine origin. This fact in regard to the fossils can only be explained by supposing that these strata have been elevated more upon their north-western, than upon their south-easterly edges, and thus brought to their present inclined position. The green sand is most exposed upon sloping grounds, especially on the banks of streams, and this has given rise to very erroneous notions in regard to its position. It is thought by many that it has been formed in the valleys of streams, and in no other localities. Now that a correct knowledge of its geological position has been obtained, enterprises for diffusing its benefits over a more extended area are planned or in operation, with promising prospects of success. The amount of this fertilizer which is accessible, is immense. A square foot of surface will yield a ton, an acre 43,650 tons, and a square mile more than 27 million tons.

There are a great many square miles of it. The occurrence here of this immense and much needed supply of fertilizing matter, brought

from the deposits of the sea, is an interesting example of that compensating action which is going on in every department of the material world. Chemists tell us that the air of our atmosphere is kept in a state of almost uniform purity by the reciprocal action of plants and animals upon it. Carbonic acid, which is rejected from our lungs as worthless and even poisonous, is the food of plants, and they are continually taking it from the atmosphere to to supply the materials for their growth; the carbonic acid is decomposed, its carbon becomes part of the vegetable structure, and its oxygen returns to the air to render it pure and wholesome. In the aquarium, the balance of animal and vegetable life is so adjusted that with no supplies from without, both forms maintain a healthy existence, each supplying what the other needs for food, and removing that which, if accumulated, would become hurtful. The action of geological agencies in bringing from the ocean that which seems lost, is another example of the same kind, with only the difference that the vibration of the balance is longer. Rains and other causes are continually carrying the elements of fertility from the soil to the streams, and so on to the sea, and immense quantities of the richest of the soil are carried away, apparently to be lost forever. But in the progress of geological change they are again brought to the surface, once more to bring back fertility to the wasted soil, and verdure to the exhausted fields.

The whole country has been benefitted by the presence of this bed of fertilizing green sand. The fine crops produced by its use have stimulated farmers to greater exertions; better systems of husbandry have been adopted, and now that they have tasted the profits of good farming, progress is visible in every direction.

The large tract lying to the south-east of the green sand has hitherto been an unpromising field for geological as well as for industrial pursuits. The prevailing soil is light or gravelly, the timber pine, or a scrubby growth of oak. Another portion comprises the strip bordering on the Atlantic shore and Delaware Bay. Its width in some places is only a few rods, in others several miles. That portion of it which is dry upland, closely resembles the older formation on which it lies, and is distinguished from it only by the greater fineness of the earth, and by containing remains of trees and of shells of species still common in the vicinity. The striking peculiarity of the case is that they should be found so much out of place. Shells unchanged in appearance, and bearing every mark of being in the places where they lived and died, are found at various elevations up to 10 or 12 feet above high water mark, and imbedded in earth as dry and solid as any other upland soil. Stumps and trunks of trees are found in similar condition, some buried below the present tide level, and others above it. The soil being formed from the washings of that above it, is among the most productive in the State.

The low sandy islands or banks, or beaches as they are commonly called, standing immediately upon the ocean, also belong to this formation. They extend along the whole of our Atlantic shore, and are to be found on Delaware Bay and Sandy Hook. These beaches are composed entirely of fine white sand. They rise from two to thirty feet above high water, the average being not more than eight or ten feet. Some of them are bare sand, but most are covered with bushes and trees. On the side next the ocean the sand is in the form of rounded or irregular hillocks—but on the opposite side, and in some cases over a large part of their surface, it is arranged in long narrow ridges, which, though only three or four rods in breadth, and 10 or 12 feet high, extend unbroken the whole length of the beach, which is several miles. This peculiarity of surface exists on all the beaches. It can be seen on Sandy Hook, but it is not so prominent a feature there as upon the beaches opposite Cape May. The ridges are covered with old and heavy timber, and are usually designated as the "Old Beach." The hillocks, covered with a younger and much lighter growth, constitute "Young or Little

Beach." The beaches undergo no changes of importance on the side next the marsh or upland. The higher flow of the tides is killing the timber on the lower parts, and salt grass now grows where bushes or trees formerly flourished. But the changes are slight. On the sea side, where they are exposed to the full force of the wind and waves, they are rapidly wearing away. Every year the hillocks are drifting in and the beaches growing narrower. In some places the sea has broken entirely across them, and the sand is spread out upon the surface of the marsh. A singular fact connected with their extension in length is worthy of notice.

The beaches below Great Egg Harbor, and all, I presume, below Barnegat, are continually extending at their S. W. extremities. The sand points which they put out gradually crowd the inlet before them, until it comes close to the N. E. end of the next beach, when the sea breaks over the point at the original location and a new inlet is formed, which again travels over the same space. The beaches on Long Island also extend themselves westward, but Sandy Hook and those next south of it, extend in the opposite direction. The point of the Hook is said to have increased in length over a mile within the last hundred years. In the early maps of the Hook, it is represented as being a point of the Highlands, and Shrewsbury and Neversink rivers run directly out to the ocean. In 1778, the sea broke through between Sandy Hook and the Highlands, and the former became an island. The extension of the land beaches above Long Branch continued to force the mouth of Shrewsbury river further and further North, until in 1810 they closed it entirely, and the only outlet for the river was between the Highlands and Sandy Hook. In 1830, the sea opened a passage across the beach near the former mouth of the river. This inlet, as it was called, was continually shifting its place moving always toward the North till in 1848 it was a mile North of its original position. In that year it was closed and has remained so ever since. A correct theory of the origin of these beaches and a full exposition of the changes they are undergoing, are needed. *A modifying control of their causes would do much to improve the navigation in the principal approach to this city.*

Between the beaches and the upland is a large extent of *tide marsh*. This, too, is of a very recent date—indeed it is rapidly forming now. Occupying the comparatively quiet space behind the beaches, and still penetrated in every direction by channels and thoroughfares which admit the ocean water freely, aquatic plants of every kind find congenial situations and thrive. Mud is deposited among them, and thus a sod is formed which continually keeps its upper surface at the level of high water, and pushes its edges farther and farther into the sounds and bays.

The marsh not only encroaches on the water surface, but appears also to be gaining on the upland. Shallow as it is seen to be on the margin, and with the upland rising by a very gentle slope, it requires but a slight rise in the water to carry it forward over a considerable breadth; and in this respect, very marked changes have been observed since the first settlement of the country. Numerous places are known, where upland trees formerly grew, which are now covered by the salt marsh, and on which no fresh water plants can grow. And roots, and in some cases, trunks of trees, are frequently found where they grew, which are now several feet below the level of high tide and buried in marsh mud. This encroachment is to be noticed wherever the marsh meets the upland or the beaches. The same fact is equally marked on Long Island and on the shores of Chesapeake bay.

These facts all go to show that now, as in the preceding periods of geological time, motion and not rest is the condition of the earth's surface —that our own shores are undergoing a gradual subsidence, a change so slow that its effects are not seen in a year or even in a score of years; but in a life time, is well marked in the advance of marsh upon upland, in the increased power of the sea to wear away the land, and in the deepening of open channels.

Upon the conclusion of this paper, Ex-Governor Horatio Seymour proposed a vote of thanks to Prof. Cook for his admirable paper. He alluded to the importance of the study of geology, and related some remarkable and very interesting facts, regarding the early history of the British settlers, showing where, with the proper appreciation of geological knowledge, fortunes have been made, and want or disregard of that knowledge has been attended with enormous losses.

EXPLORATION OF THE ROCKY MOUNTAINS IN THE BRITISH POSSESSIONS.

At a recent meeting of the Royal Geographical Society, a paper was communicated by Sir E. Bulwer Lytton, Colonial Secretary, giving the results of the explorations of the Rocky Mountains lying in the British Possessions, made by Capt. Palliser, under the direction of the British Government. The paper states that several practical passes had been discovered leading through the mountains, which are enumerated as follows:

1, from the south branch of the Saskatchawan to Kutanie river, two—*i. e.*, Kananaski Pass and Vermillion Pass; 2, from Kutanie River to Columbia, two—*i. e.*, the Lake Pass and Beaver Foot Pass; 3, from the south branch of the Saskatchawan to north branch, one—*i. e.*, the Little Fork Pass; and 4, from the south branch of the Saskatchawan to the Columbia one—*i. e.*, the Kicking Horse Pass. In addition to these discovered passes, the Northern Kutanie Pass has been laid down, and found to be entirely within the British territory, and has been named British Kutanie Pass. After the reading of these highly important papers, the President, in commenting upon the reports which had been read, reminded the Fellows that the expedition was fostered in the first instance by the Geographical Society, and that they had therefore great reason to be proud of successful results as those which had attended it. After briefly alluding to the praiseworthy efforts made by Palliser and his associates, Hector, Blackiston and Sullivan, in a preceding year, in defining the nature of the great region between Lake Superior and Lake Winnipeg, and thence extending to the Red River Settlement, (a region also explored by men of science sent thither by the Canadian Government,) he begged the gentlemen who might be disposed to speak, to confine their attention chiefly to the last discoveries, which indicated, first, the rich quality of the soil over a vast prairie country, watered by the upper affluents of the north and south Saskatchawan River, and next the existence of passes through the Rocky Mountains within the British Territory—*i. e.*, between 49 deg. and 51½ deg. north latitude, which had been for the first time examined by men of science, who had determined the geographical position, the relative altitudes of the mountains, and their mineral characters. He pointed out that it was a remarkable and satisfactory *datum* that, although in this portion of its range the chain rose to much loftier summits than in its prolongation to the south, the depressions, or passes, in it were now shown to be about 2,000 feet lower than those by which the Americans can travel into the central parts of California. After adverting to the great interests which necessarily attached to these discoveries in relation to the establishment of a line of intercourse between the great eastern or Atlantic watershed of British North America and the newly established colony of British Columbia, with its gold fields on *terra firma*, and the great coal deposits of Vancouver's Island on the Pacific, he hoped that persons who had long studied the subject, such as Mr. John Ball, lately of the Colonial office; Mr. Edward Ellice, who had so much knowledge of British North America, and so large a stake therein; Lord Bury, who had recently returned from that country, &c., would address the meeting. Mr. Ball and Lord Bury having spoken at some length, the President, in adjourning the meeting, stated that Sir E. B. Lytton, had not only kindly communicated the despatches which had been read, but had further acceded to the request of Capt. Palliser and Dr. Hector that they might be permitted to return to England next summer, revisiting the passes they had discovered, and exploring British Columbia on their road to the shores of the Pacific.

It is to be regretted that the elevation of the above described passes was not given absolutely instead of by comparison with those over which Americans pass on the central route between the Eastern States and California. One of these, called the Cochetope, is 10,000 feet above the sea. The passes lying next to this, both north and south, are elevated 8,000 feet; so that if those discovered by Capt. Pallisser are 2,000 feet lower, still they are equally elevated as the pass on the line of the

proposed railroad, in the parallel of 47°. But it must be borne in mind that the plains at the eastern base of the Rocky Mountains are much lower, probably 1,500 feet, in the British Possessions than in the United States. Their ascent, consequently, may be much more abrupt and difficult than of those in the United States. It is not so much the absolute height of the ground that is the chief obstacle to the construction of a railroad, as the shortness of the distance by which it is to be overcome.

The Report of Capt. Pallisser is looked for with much interest. It must prove of great value in illustrating the geography of the country, as well as in reference to the proposed lines of railroad across the continent.

DEPARTMENT OF STATISTICS.

STATISTICS OF AMERICAN STATES.

NO. 4.

REPUBLIC OF PERU.

Lat. 3° 35′ to 21° 48′ S. | Populat'n (1852) 2,106,492.
Long. 68° 10′ to 81° 30′ W. | Density, 4.22 to sq. mile.
Area, 498,726 sq. miles. | Capital, LIMA.

CONSTITUTION.

Executive.—President, elected by the people through electoral colleges, for six years.

Administration.—1. Minister of the Interior and Religion; 2. Minister of Foreign Affairs and Finance; 3. Minister of War and Marine; 4. Minister of Justice and Public Instruction.

Council of State.—All the Ministers and such Senators as Congress may nominate. The President of the Council supplies the place of President of the Republic, in case of his removal, inability, or death.

Legislature.—A Congress, consisting of a Senate composed of two members from each department, and a House of Deputies, composed of one Deputy for every 20,000 inhabitants.

Judiciary.—A Supreme Court at Lima; and Superior Courts at Lima, Cuzco, Arequipa, Trujillo, Ayacucho and Puno. In the provinces, Courts of First Instance, and in the districts, Justices' Courts. There are also special mining, military, and other courts.

National Religion.—The Holy Apostolic Roman Catholic. The Church is under the supervision of the Archbishop of Lima, and the Bishops of Arequipa, Chachapoyas, (Maynas,) Cuzco, Huamanga and Ayacucho, and Trujillo.

HEIGHTS OF THE PERUVIAN ANDES.

Names.	Lat. S.	Long. W.	Hgt., ft.
Sahama	18° 07′	68° 52′	22,350
Parinacota	18° 10′	69° 11′	22,030
Gualateiri	20° 13′	69° 17′	21,960
Pomarape	18° 08′	69° 03′	21,700
Chuquibamba	16° 06′	72° 16′	21,160
Chipicani	17° 43′	69° 47′	19,748
Arequipa (vol.)	16° 19′	71° 23′	18,373
Apucununanu	14° 10′	70° 20′	17,525
Viuda Pass	10° 45′	76° 30′	15,968
Lagunillas Pass	15° 52′	71° 15′	15,590
Raya Pass	14° 25′	70° 40′	14,520
City of Cuzco	13° 31′	72° 04′	11,380
Chiquiacoba Lake	18° 45′	75° 30′	13,200

RIVERS OF PERU.

1. *Emptying into the Pacific Ocean.*—Tumbez, Chira, Sechura, Jequitepeque, Sana, Viru, Santa, Patavilca, Huaura, Chillon, Rimac, Mala, Canete, Pesco, Ocona, Camana, Quilca, Tambo, and Loa.

2. *Emptying through the Amazon into the Atlantic.*—Tunguragua or Maranon, Huallaga, Ucayali, (formed by the Pachitea, Apurimac and Beni,) and Yavari.

CIVIL DIVISIONS AND POPULATION.

Peru is divided into *eleven* departments, and two provinces called "littorales," having the organization of departments. The departments are divided into 61 provincias, subdivided into 625 distritos, and these into partidos or parishes. The government, civil and economical, of each department, is in charge of a prefect, dependent directly on the President of the Republic; that of each province is in charge of a sub-prefect, dependent on the departmental prefect; that of each distrito or district is in charge of a governor; and that of each partido in charge of a sub-governor.

The following table exhibits the extent and population of the departments:

Departments.	Area, sq. m.	Population.	Capitals.
Amazonas	96,276	43,074	Chachapoyas.
Ancach	23,928	219,145	Huarez.
Arequipa	36,117	119,336	Arequipa.
Ayacucho	32,829	132,921	Huamanga.
Cuzco	72,124	349,718	Cuzco.
Huancavelica	14,284	70,117	Huancavelica.
Junin	85,338	222,949	Cerro de Pasco.
Libertad	27,444	266,553	Trujillo.
Lima	24,288	250,801	Lima.
Moquegua	39,198	61,432	Tacna.
Puno	25,918	285,661	Puno.
Provincia de Callao	216	8,453	Callao.
" de Piura	20,766	76,332	Piura.
Total	498,726	2,106,492	LIMA.

The *provinces*, named chiefly after their principal towns, are as follows:

Provinces.	Population.
AMAZONAS—	
Chachapoyas	27,728
Maynas	15,346
ANCACH—	
Cajatambo	24,799
Conchucos	54,751
Huari	48,579
Huaylas	84,676
Santa	6,340
AREQUIPA—	
Arequipa	63,816
Cailoma	23,443
Camana	14,418
Union	17,659
AYACUCHO—	
Andahuaylas	19,184
Cangallo	20,027
Huamanga	29,617
Huanta	26,358
Lucanas	17,401
Parinacochas	19,334
CUZCO—	
Abancay	21,912
Anta	31,300
Aymaraes	18,228
Calca	16,223
Canas	37,605
Chanchis	36,400
Chumbivilcas	23,250
Cotobambas	23,241
Cuzco	41,152
Paucartambo	17,026
Paruro	17,732
Quispicanchi	20,700
Urubamba	39,949
HUANCAVELICA—	
Angaraes	20,300
Castrovireyna	15,348
Huancavelica	17,318
Tayacaja	27,151
JUNIN—	
Huanuco	26,799
Huamalies	32,027
Jauga	93,712
Pasco	70,411
LIBERTAD—	
Cajamarca	46,122
Chiclayo	26,123
Chota	62,597
Huamachuco	60,854
Jaen	8,560
Lambayeque	24,682
Pataz	29,394
Trujillo	8,221
LIMA—Canete	17,653
Canta	16,384
Chancay	25,600
Huarachiri	14,400
Ica	41,500
Lima	120,000
Yauyos	15,264
MOQUEGUA—	
Arica	18,642
Moquegua	32,380
Tarapaca	10,410
PUNO—Azangaro	54,333
Carabaya	22,138
Chuquito	75,958
Huancane	50,765
Lampa	76,468

The *principal cities*, capitals of departments, are as follows:—Chachapoyas, 4,600; Huaras, 5,500; Arequipa, 38,000; Ayacucho, 18,000; Cuzco, 47,500; Huancavelica, 5,500; Cerro de Pasco, 14,000; Trujillo, 6,500; Lima, 100,000; Tacna, 10,000; Puno, 8,600; Callao, 6,000; Piura, 12,000.

NATIONAL FORCES.

Militia—All male citizens between the ages of 18 and 45 years.

Standing Army—About 6,000 men, and organized as follows:

Artillery—2 foot batteries, 1 horse squadron.
Infantry—8 battallions of 3 companies.
Cavalry—3 regiments, (hussars, chasseurs, and lancers.)
Corps of engineers.

The artillery is equipped with 24 twelve pound cannon, and a like number in reserve. The infantry is armed with Minie rifles; and the cavalry with ball-proof cuirasses and Sharp's carbines.

The official staff in 1856, consisted of 2 grand marshals, 5 generals of division, 22 generals of brigade, 142 colonels, 158 lieutenant-colonels, 201 majors, 404 captains, 456 first lieutenants, 418 second lieutenants, 11 commissaries, and 37 surgeons—total, 1,856. Of this number there were 418 on leave, with pay; 274 invalided, with pay; 280 retired with pensions. At the same date, 528 widows and children of officers were receiving pensions.

National Navy—In 1856 the navy was constituted as follows:

2 frigates (33 and 46 guns)	79	guns.
2 steamers (10 guns)	20	"
4 small steamers (6 guns)	24	"
1 brigantine	14	"
1 mail boat	.	
5 transports, etc	5	"
15 Total	142	"

The *personnel* of the fleet consisted of 3 admirals, 40 captains, 17 first lieutenants, 18 second lieutenants, 40 midshipmen, 20 marine officers, 51 pursers' clerks, 7 surgeons, and 11 pilots. The infantry of marine composed one battalion of 458 men; and the number of seamen was 428.

PUBLIC FINANCE.

According to the estimates for 1857, the receipts would amount to $18,656,256, and the expenditures to $16,360,051.

Receipts.

From customs duties*	$2,263,282
" sales of guano	15,296,952
" other sources	1,096,022

Expenditures.

Ministry of War and Marine	$5,392,202
" of Interior and Religion	3,825,248
Miscellaneous	3,806,901
Debt	1,406,636
Interest	1,929,064

The *public debt* on the 1st January, 1858, consisted of:

Domestic Debt—Consolidated	$10,134,969
" Floating	1,784,918
" All other	4,531,500
Total	$16,451,387
Foreign Debt	30,000,000
Total Public Debt	$46,451,387

NATIONAL COINAGE (1855.)

Silver (in 5, 10, 20, 50 and 100 cents)	$1,546,196
Gold (in 5 and 10 dollar —Condor— pieces)	650,175
Total Coinage	$2,196,371

* The Customs revenue in 1855 amounted actually to $3,766,814, and in 1856 to $3,279,566.

FOREIGN COMMERCE (1853.)

1.—*Value of Exports and Imports.*

	Imports.	Exports.
Australia	$117	$.....
Bolivia	30	11,594
Brazil	25,388	26,907
Buenos Ayres	11,582	.....
Central America	77,105	.....
Chile	654,007	497,437
China	289,496	.....
Denmark	64	14,000
England	4,616,291	8,818,827
Ecuador	196,828	8,283
France	1,883,781	1,441,606
Germany	10,877	27,681
Hamburg	486,327	214,814
Holland	382	24,500
Italy	42,903	60,715
Mauritius	.....	80,055
Mexico	15	35,490
New Granada	42,820	49,605
Paraguay	80	.....
Prussia	1,307	.....
Spain	162,367	228,994
Sweden	.....	36,557
Switzerland	102	.....
West Indies	.....	264,240
United States	586,024	4,898,378
Total	$9,087,894	$16,880,377

2.—*Principal Imports.*

Silk goods	$675,257
Linen goods	286,945
Cotton goods	2,760,300
Woolen goods	1,293,328
Jewelry	194,498
Wearing apparel	118,051
Furniture	249,372
Wood	227,503
Fruits	64,746
Provisions and spices	730,280
Wines and liquors	253,006
Sundries	2,234,608
Total value	$9,087,894

3.—*Principal Exports.*

Cascarilla bark	$66,542
Cochineal	14,437
Cotton	47,652
Hides	17,313
Guano	10,776,690
Wool	577,850
Gold	353,199
Silver	3,017,777
Saltpetre	1,483,820
Tobacco	135,551
Wines and liquors	4,226
Sundries	385,340
Total value	$16,880,377

4.—*Merchant Marine.*

9 ships	3,194 tons.
10 barques	4,156 "
141 coasting vessels	14,705 "
160 Total (1852)	22,055 "

5.—*Gold, Silver, Guano, and Saltpeter Exported.*

To	Gold.	Silver.	Guano.	Saltpeter.
Bolivia	$11,594	$.....	$.....	$.....
Brazil	1,302	.....	.....	.....
Chile	10,200	37,310	.....	3,503
China	5,389	76,400	58,905	.....
Denmark	.....	.....	.....	14,000
England	245,295	2,172,336	5,017,860	802,023
Sweden	2,380	1,814	.....	.....
France	68,755	709,381	422,595	237,842
Germany	.....	.....	.....	27,281
Hamburg	.....	.....	.....	202,044
Holland	.....	.....	.....	24,500
Italy	2,552	346	35,280	22,225
Mauritius	.....	.....	80,055	.....
N. Granada	.....	600	.....	.....
Spain	5,712	10,946	184,095	28,241
Sweden	.....	.....	.....	36,557
United States	.....	8,644	4,713,660	85,204
West Indies	.....	.....	264,240	.....
Total	$353,199	$3,017,777	$10,776,690	$1,483,820

6.—*Imports by Ports.*

Callao	$6,076,474
Arica	860,170
Islay	1,454,358
Huanchaco	235,745
San Jose	180,738
Paita	253,917
Loreta	26,494
Total value	$9,087,897

7.—*Commerce for Three Years.*

	Imports.	Exports.
1851	$9,447,465	$13,085,715
1852	9,316,242	10,173,216
1853	9,087,897	16,880,377
	$27,851,604	$40,119,308
		27,851,604
In favor of Peru in 3 years		$12,267,704
Or annually		4,089,235

8.—*Commerce with United States.**

(According to U. S. Treasury Reports.)

	Imports.	Exports.
1849	$446,953	$111,236
1850	170 753	275,728
1851	94,733	272,098
1852	694,892	355,842
1853	173,441	697,577
1854	1,005,406	685,155
1855	597,618	870,546
1856	217,759	1,244,223
1857	208,747	507,932
1858	1,000,541	685,989

WEIGHTS, MEASURES AND MONEYS.

Old standards—Those of Spain.

New standards—Those of France.

The dollar of Peru=5 francs; the condor (gold)=10 dollars.

* Compare the values given by the U. S. and Peruvian returns severally for 1853–4. The variation is accounted for chiefly in the low price guano is entered in the United States.

ELEMENTARY STATISTICS OF EUROPEAN STATES.

No. 1.

EXTENT AND POPULATION.

States and Countries.	Extent in sq. miles. Districts.	Extent in sq. miles. Total.	Year of Return.	Population Districts.	Population Total.	Capital Cities and Population.
Andorre	....	191	1858	.....	8,132	Andorre 2,000
Anhalt-Bernburg	....	319	1855	.....	53,475	Bernburg 6,772
Anhalt-Dessau-Kœthen	....	599	"	.....	114,851	Dessau 11,981
Austrian Empire	....	257,579	1854	.....	39,411,309	Vienna 579,157
German Provinces	81,346	....	"	13,794,114	.....	[Milan, 174,359; Prague, 118,405; Pesth, 106,379; Venice, 106,353.]
Galicia, Bukowina, etc	34,257	....	"	5,487,311	.....	
Hungary, Transylvania, etc	124,424	....	"	14,626,411	.....	
Lombardy and Venice	17,552	....	"	5,503,473	.....	
Baden	....	5,916	1852	.....	1,356,943	Carlsruhe 25,160
Bavaria	....	29,484	1855	.....	4,541,556	Munich 132,112
Belgium	....	11,402	1856	.....	4,529,460	Brussels 260,659
Bremen	....	74	1855	.....	88,856	Bremen 60,087
Brunswick	....	1,427	1857	.....	269,915	Brunswick 43,291
Denmark	....	22,036	1858	.....	2,468,713	Copenhagen 143,591
Denmark Proper	14,790	....	"	1,499,850	.....	[Schleswig, 12,097; Gluckstadt, 6,219; Ratzeburg, 3,088.]
Schleswig	3,548	....	"	395,860	.....	
Holstein	3,294	....	"	523,528	.....	
Lauenburg	404	....	"	49,475	.....	
France	....	207,149	1856	.....	36,039,364	Paris 1,178,262
Continental France	203,771	....	"	35,799,181	.....	[Ajaccio, 11,944.]
Island of Corsica	3,378	....	"	240,183	.....	
Frankfurt	....	39	1855	.....	74,784	Frankfurt 64,257
Gibraltar	....	6	1851	.....	15,823	Gibraltar 15,823
Great Britain and Ireland	....	122,551	1857	.....	28,560,203	London 2,616,248
England and Wales	58,320	....	"	19,304,019	.....	[Merthyr-Tydvil, 63,080; Edinburg, 160,302; Dublin, 258,361; Castletown, 2,531; St. Peter's, 1,000; St. Helier, 29,741.]
Scotland	31,324	....	"	3,064,566	.....	
Ireland	32,513	....	"	6,047,492	.....	
Isle of Man	282	....	1851	52,387	.....	
Guernsey	50	....	"	33,719	.....	
Jersey	62	....	"	57,020	.....	
Greece	....	19,031	1857	.....	1,045,232	Athens 31,125
Hamburg	....	136	"	.....	220,401	Hamburg 169,718
Hanover	....	14,846	1855	.....	1,819,777	Hanover 42,484
Heligoland	....	5	1851	.....	2,230	.....
Hesse-Cassel	....	3,740	1854	.....	755,350	Cassel 32,516
Hesse-Darmstadt	....	3,245	1855	.....	836,424	Darmstadt 29,766
Hesse-Homburg	....	106	"	.....	24,937	Homburg 4,600
Holland	....	13,610	1858	.....	3,523,823	The Hague 62,467
Holland Proper	12,620	....	"	3,328,795	.....	[Amsterdam, 260,037; Rotterdam, 103,322.]
Luxemburg	990	....	"	195,028	.....	
Ionian Islands	....	1,102	1856	.....	226,824	Corfu 15,921
Lichtenstein	....	61	"	.....	7,150	Lichtenstein 1,800
Lippe-Detmold	....	437	1855	.....	105,490	Detmold 4,716
Lubeck	....	126	1857	.....	55,423	Lubeck 30,717
Mechlenburg-Schwerin	....	5,187	"	.....	439,231	Schwerin 17,336
Mechlenburg-Strelitz	....	1,051	1851	.....	99,628	New-Strelitz 6,484
Maltese Islands	....	219	"	.....	128,261	Valetta 59,822
Modena	....	2,336	1857	.....	604,512	Modena 31,052
Monaco	....	58	1851	.....	8,213	Monaco 1,200
Nassau	....	1,838	1857	.....	434,064	Weisbaden 12,296
Oldenburg (with Kniphausen)	....	2,458	1855	.....	287,163	Oldenburg 7,829
Parma	....	2,401	1857	.....	499,835	Parma 44,758
Portugal	....	42,415	1854	.....	3,844,119	Lisbon 260,000
Continental Portugal	35,253	....	"	3,505,129	.....	[Oporto, 85,000; Funchall, 26,000; Braga, 20,000; Coimbra and Evora, each 17,000.]
Azores	5,546	....	"	231,910	.....	
Madeira, etc	1,616	....	"	107,088	.....	
Prussia	....	108,004	1855	.....	17,202,831	Berlin 451,871
Prussia Proper	107,552	....	"	17,137,765	.....	[Breslau, 121,345; Cologne, 105,504; Konigsberg, 77,748; Danzig, 63,461; Magdeburg, 71,549.]
Hohenzollern	446	....	"	64,839	.....	
Jahde	6	....	"	227	.....	

TABLE OF EUROPEAN STATISTICS—CONTINUED.

States and Countries.	Extent in sq. miles. Districts.	Total.	Year of Return.	Population. Districts.	Total.	Capital Cities and Population.
Reuss-Greitz	....	144	1855	.....	39,397	Greitz 6,215
Reuss-Schleitz	....	448	"	.....	80,203	Schleitz 4,912
Roman States	....	15,903	1857	.....	3,126,263	Roma 179,951
Russia in Europe	....	2,134,126	1851	.....	60,122,617	St. Petersburg 532,241
Great Russia	890,412	....	"	20,700,497	.....	Tula 54,626
Little Russia	80,896	....	"	6,046,467	.....	Moscow 373,801
South Russia	175,639	....	"	4,234,329	.....	Odessa 71,392
West Russia	162,122	....	"	8,021,510	.....	.....
Baltic Provinces	57,583	....	"	2,216,936	.....	Riga 57,906
Finland	146,275	....	"	1,660,763	.....	.....
Kasan	239,367	....	"	6,990,580	.....	.....
Astrakan	332,294	....	"	5,399 532	.....	.....
Poland	49,538	....	"	4,852,055	.....	Wilna 52,268
San Marino	....	24	....	.....	7,750	San Marino 1,250
Sardinia	....	29,165	1857	.....	5,167,542	Turin 179,635
Piedmont	19,833	....	"	4,590,260	.....	[Genoa, 119,610.]
Sardinia and Capraja	9,332	....	"	577,282	.....	
Saxe-Altenburg	....	510	1857	.....	133,593	Altenburg 16,811
Saxe-Cobourg-Gotha	....	772	1855	.....	150,878	Coburg 12,122
Saxe-Meiningen	....	972	1857	.....	165,662	Meiningen 6,497
Saxe-Weimar-Eisenach	....	1,402	1855	.....	263,755	Weimar 12,271
Saxony	....	5,776	"	.....	2,039,075	Dresden 108,732
Schaumburg-Lippe	....	171	"	.....	29,848	Buckeburg 3,250
Schwartzburg-Rudolstadt	....	371	"	.....	68,974	Rudolstadt 5,912
Schwartzburg-Sondershausen	....	328	"	.....	61,452	Sondershausen 3,612
Spain	....	182,713	1857	.....	16,301,851	Madrid 301,660
Continental Spain	177,736	....	"	15,807,753	.....	[Barcelona, 252,015; Seville, 152,000; Malaga, 113,050; Murcia, 109,446; Valencia, 145,512; Grenada, 100,678.]
Balearic Isles	1,757	....	"	266,952	.....	
Canary Isles	3,220	....	"	227,146	.....	
Sweden and Norway	....	293,327	1855	.....	5,131,656	.....
Sweden	170,099	....	"	3,641,609	.....	Stockholm 100,040
Norway	123,228	....	"	1,490,047	.....	Christiania 38,958
Switzerland	....	15,272	1856	.....	2,392,740	Berne 26,340
Turkish or Ottoman Empire	....	203,828	1850	.....	16,440,000	Constantinople 787,000
Turkey Proper	136,813	....	"	12,130,000	.....	[Adrianople, 120,000; Bucharest, 80,000; Salonica, 76,000; Scutari, 50,000; Bosna-Soria, 70,000; Safia, 50,000; Jassy, 50,00; Galatz, 25,000.]
Wallachia	28,378	....	"	1,800,000	.....	
Moldavia	15,696	....	"	1,400,000	.....	
Servia	21,289	....	1854	985,000	.....	
Montenegro	1,552	....	"	125,000	.....	
Tuscany	....	8,553	1858	.....	1,793,967	Florence 114,081
Two Sicilies	....	43,201	1856	.....	9,117,050	Naples 413,920
Naples	32,621	....	"	6,886,030	.....	[Palermo, 200,000.]
Sicily	10,580	....	"	2,231,020	.....	
Waldeck	....	460	1855	.....	58,132	Arolsen 2,000
Wurtemburg	....	7,517	1856	.....	1,788,720	Stuttgard 46,507
Grand total	....	3,826,167			274,183,427	(R. S. FISHER.)

ANNOTATIONS TO TABLE OF EUROPEAN STATES.

Races, Religions, etc.

Austrian Empire, by Races, in 1851.—Germany, 7,870,719; Sclaves, 14,802,751; Italians, (Roumans,) 8,051,906; Magyars, 4,866,556; and other races, 817,719—of which were Armenian, 15,996, Jews, 706,657, Bohemians, (gypsies,) 83,769, etc.

Austrian Empire, by Religions, in 1851.—Catholics, Roman, 25,509,626, and Greek, 3,505,668; Greek, (non-United,) 2,751,846; Protestants, of Augsburg, 1,213,897, and Reformed, 1,869,546; Unitarians, 46,278; other sects, 455; Jews, 853,304.

Russian Empire by Races, (including 5,060,768 in Asia, and 54,000 in America.)—Russians of Great Russia, 33,000,000; Russians of Little Russia, 11,200,000; Russians of South Russia, 3,600,000; Lithuanians and Poles, 7,000,000; Finns and Lapps, 3,300,000; Tartars and Mohammedans, 2,400,000; Germans, 600,000; Georgians and Armenians, 2,000,000; Jews, 1,500,000; Oural races, 600,000.

Russian Empire, by Religions, (other than the National or Greek non-United.)—Roman Catholic, 2,750,000; Armenian Catholic, 14,000; Greek-United, 380,000; Lutheran, 2,000,000; Mohammedan, 2,750,000; Jews, 1,250,000; Bhuddhist, 200,000.

Turkish Empire, by Races.—Ottomans, 2,300,000; Greeks, 1,200,000; Armenians, 400,000; Jews, 70,000; Sclaves, 6,640,000; Roumans, 4,000,000; Albanians, 1,600,000; Tartars, 16,000; Gypsies, 214,000.

Turkish Empire, by Religions.—Mohammedan, 4,900,000; Greek, 10,700,000; Roman Catholic, 770,000; Jews, 70,000.

STATEMENT OF THE OPERATIONS OF THE RAILROADS OF MAINE FOR 1858.

	Length.	Cost.	Gross Receipts.	Current Expenses.	Net Receipts.	Receipts from Passengers.	Receipts from Freight.	Receipts from Miscellaneous.
Androscoggin	33	$645,271	$30,957	$13,693	$17,264	$10,877	$18,609	$1,471
Androscoggin and Kennebec	55	2,210,947	279,149	133,255	145,894	144,308	118,273	16,568
Atlantic and St. Lawrence	149	7,077,379	545,791	395,567	150,224	146,871	380,155	18,765
Bangor, Oldtown and Milford	13	175,232	33,059	16,529	16,530	12,870	19,895	294
Calais and Baring	6	224,000	28,383	15,984	12,399	1,697	25,676	1,010
Kennebec and Portland	72	2,671,264	165,074	94,328	70,746	87,591	54,977	22,506
Lewey's Island	16	310,000	12,950	7,000	5,950	2,100	10,550	....
Penobscot and Kennebec	55	1,874,831	Run by the Androscoggin and Kennebec Railroad.					
Portl'd, Saco and Portsmouth	51	1,500,000	211,997	110,498	101,499	155,954	48,029	8,014
Somerset and Kennebec	37	783,763	50,000	30,000	20,000	25,000	25,000	....
York and Cumberland	20	398,000	30,524	24,519	6,005	13,817	15,907	807
Total	507	$18,070,687	$1,387,894	$841,369	$546,515	$620,085	$667,376	$69,420

RAILROADS OF MAINE.

Subjoined is a statement—

Showing the cost, earnings, etc., etc., of the Maine Railroads, from the opening of the Bangor, Oldtown and Milford Railroad, in 1836, to the present time.

Year.	Length.	Cost.	Gross Receipts.	Current Expenses.	Net Receipts.	Receipts from Passengers.	Receipts from Freight.	Receipts from Miscellaneous.
1838–1842	60	$1,794,739	$86,217	$65,829	$20,388	Aggregate of B., O. & M. for 5 y'rs.		
1843	63	1,426,933	47,918	34,900	13,018	$26,614	$10,885	$2,820
1844	63	1,537,722	124,842	60,176	64,666	84,926	10,957	9,062
1845	63	1,615,489	150,180	64,131	86,049	106,137	18,138	7,128
1846	63	1,628,739	150,248	70,109	80,139	98,991	18,503	6,702
1847	63	1,639,556	173,209	72,723	100,486	120,454	19,157	8,574
1848	63	1,406,824	194,630	78,842	115,788	129,344	20,891	10,568
1849	111	2,927,091	293,799	124,319	169,480	190,707	62,300	10,410
1850	111	3,070,864	361,981	149,912	212,069	234,999	82,903	18,629
1851	254	8,219,648	571,204	270,565	300,639	265,170	178,047	27,987
1852	349	11,188,350	711,459	340,770	370,689	428,960	247,468	35,010
1853	385	12,998,056	963,416	467,329	496,087	515,775	361,039	46,234
1854	385	13,625,760	1,236,037	658,401	577,636	635,688	543,137	58,213
1855	385	14,064,040	1,398,616	817,697	570,919	677,326	662,580	58,403
1856	460	16,865,303	1,524,960	987,187	537,773	736,671	724,367	63,922
1857	478	17,077,546	1,429,251	959,389	469,762	653,588	720,757	54,636
1858	507	18,070,687	1,387,894	841,369	546,515	620,085	667,376	69,420
	$129,151,337	$10,795,861	$6,073,643	$4,722,218	$5,513,368	$4,239,506	$487,718	

The aggregate result of the operation of the railroads of the State since the opening of the first road in 1837, is fully shown in the condensed statement. Their total aggregate cost, (that of the several years being added together) —$129,151,337. Gross earnings, $10,795,861; current expenses, $6,073,643; net earnings, $4,722,218.

The general result is not a favorable one. The per centage of gross earnings to capital invested, has been at the rate of 8½ per cent.—net do., at the rate of 3⅜ per cent. The large addition, from earnings, to construction, by some of the roads, particularly by the Atlantic and St. Lawrence, is one reason for the comparatively small ratio of *net* earnings.

All the railroads of Maine, with the exception of the Atlantic and St. Lawrence, have a very light traffic in *freight*, owing to the almost unrivalled facilities for communication by water which the State possesses.

The dividends on the Atlantic and St. Lawrence Railroad have been paid by the Grand Trunk, of Canada, under an agreement between two companies.

ON THE MANNER OF TAKING A CENSUS.

To the Committee of Publication of the Am. Geo. and Stat. Society:

GENTLEMEN—In a former commnication, I noticed some of the difficulties in the way of obtaining full and accurate census returns, as encountered in the persons employed upon the service. Allow me in this, to examine some of the obstacles that will be met among the people themselves, from whom the primary facts are to be obtained, and upon the precision of which everything else depends.

First, because greatest, I will name *ignorance*, as an obstacle to satisfactory returns, which can only be overcome by promoting general intelligence, and especially by diffusing correct notions of the purposes and wants of this great national inquiry. I use this term in the general way, to express a want of information upon the particular points that require specific answers, and which are to be represented by definite figures as the basis of general deductions.

There is generally much more precision with regard to the returns of the personal census, than those of agriculture, manufactures, and other collateral inquiries; and as returned in 1855, I am convinced that in an exceedingly large proportion of cases, these statistics were strictly correct. Whatever apprehensions the unenlightened portions of the public may have, of some sinister motive on the part of government, with regard to establishing a basis for taxation, there can scarcely be found a person, however ignorant, who has had the slightest acquaintance with our institutions, that would entertain a suspicion that a tax or other burden was to grow out of the personal inquiries of the census, or who could not have known from his own observation, that taxes upon the person, except for highway labor, and a few minor objects in some States, are unknown among us. The fear of military conscription prevented a few newly arrived emigrants from giving freely the required answers to the interrogatories; and strange as it may appear, the dread of pestilence, like that which visited the Israelites after the census ordered by David, still finds place in the minds of the superstitious.* These objections are, however, so rare that they become curiosities, rather than difficulties requiring special effort for removal. Whatever defects the census may show with regard to personal statistics, they must therefore be mainly attributed to other causes than unwillingness on the part of those giving in the returns. The number of persons whose ages were not given in years or months, according to the instructions, in 1855, in New York State, was less than a fifth of one per cent.; and those whose place of birth was unknown, were less than half of one per cent. of the total population. The principal defects in these cases, probably arose in most instances from the answers being given by other persons than those to whom they related.

Statistics of agriculture and manufactures, when returned with the utmost good faith by the proper persons for giving them, must often be widely variant from facts, on account of the absence of data for correct returns. When we reflect that farmers seldom survey the fields devoted to particular crops, or weigh the hay

* II Samuel, xxiv, 15.

fed upon their farms, or measure the supplies consumed in their families, or the roots and grains fed to their stock, we must be prepared to find the census returns of these items founded upon estimates more or less approaching the truth, according to the soundness of judgment or systematic habits of the person answering the inquiries. Manufactures conducted methodically, and limited to the consumption of a few kinds of material, and the yielding of few kinds of product, are liable to but few difficulties in obtaining their statistics, the principal of which arises from the fact that the inquiries are made at a season of the year when the accounts are not posted up. The period which they embrace, extending through parts of two years, renders comparison with statistics for the civil year inconvenient and liable to error. The greatest difficulty incident to the procuring of manufacturing statistics, arises from the mixed and complicated character of the business, which may in one place embrace many distinct pursuits that elsewhere are reported separately. A furnace for reducing iron from the ore, may, for example, be connected with an iron foundry, smith shops, machine shops for working wood and metals, and the manufacture of a great variety of articles, which, as they are conducted together, will defy the most patient attempts at analysis, in assigning to each its due proportion of labor and capital. For this difficulty there can scarcely be hoped a remedy, and the science of statistics must, in many cases, be content with a general statement of values, and a very comprehensive plan of classification.

Inquiries of a historical character have been in some census schedules, but generally without satisfactory result. However desirable it might be to ascertain the date of establishment on a general retrospect of operations, this information often requires an amount of investigation or a search after absent records, that must be left to the local historian, rather than be imposed upon the Census Marshal. Of a still more objectionable and wholly impracticable character, would be inquiries implying professional education or special qualifications, such as those relating to geology or natural history, which, to be worth anything, must be obtained by skillful persons, carefully instructed and generally familiar with the subject. There is constantly a tendency to the introduction of special inquiries into the census, to supply information that may interest a small class, but would prove of little general utility.* They may perhaps, of themselves, be important, but in general, should be ascertained by investigations made for the particular purpose, by those whom they especially concern.

Respectfully yours,

FRANKLIN B. HOUGH.

ALBANY, March 8, 1859.

RUSSIAN AMERICA.

	1854.	1855.
Revenue—Products from sale of furs	$568,563	$564,689
" " other articles	258,415	268,060
Total	$826,978	$832,749
Expenses of administration in Russia and the colonies	$400,362	$424,435
Assurances, cost of freights and duties paid	277,759	259,457
Total	$678,121	$683,892
Russian population, Jan. 1, 1856		9,725

SURINAM AND THE DUTCH WEST INDIES.

In 1854 the population of Surinam consisted of:—

Free	13,793	viz., Males,	6,990	Females,	6,803
Slave	38,545	"	18,313	"	20,232
Total	52,338	"	25,303	"	27,035

and contained 256 plantations, on which were residing 924 free, and 32,524 slave persons. Of these 91 were sugar, 52 coffee, 15 coffee and cocoa, and 32 cotton plantations.

The sugar exports were, in the year named: to the Netherlands, 22,055,108 lbs.; to North America, 4,654,276 lbs.; and to other places, 6,376,634 lbs.—total, 33,083,018 lbs., valued at 2,333,763 gulden. The molasses exported was:

* In preparing the schedules for the New York State Census of 1855, the Secretary of State received suggestions in some instances strikingly illustrative of the above statement. One correspondent wished inquiries about the kind and quantity of timber; another, the number of sheep slain by dogs, and others, subjects quite as foreign as these to the legitimate objects of the census.

to North America, 672,919; and to other places, 277,193—total 950,112 gallons, valued at 190,-022 gulden. The rum exported amounted to 94,408 gallons, valued at 57,424 gulden; coffee, 66,618 lbs., 140,553 gulden; cocoa, 194,254 lbs., 33,719 gulden; and cotton, 677,705 lbs., 219,-036 gulden.

The population of the Dutch West India Islands in the same year was as follows:

Islands.	Free.	Slaves.	Total.
Curacoa	11,413	5,418	16,831
Bonaire	1,570	769	2,339
Aruba	2,635	566	3,201
St. Martin (part)	1,300	1,618	2,918
St. Eustache	785	1,071	1,856
Saba	1,060	649	1,709
Total	18,763	10,091	28,854

—or, according to religious faith, as follows:

Islands.	Protestant.	Catholic.	Jewish.
Curacoa	1,922	14,123	786
Bonaire	120	2,218	1
Aruba	428	2,772	1
St. Martin	1,187	100	2
St. Eustache	1,623	230	3
Saba	1,682	27	..
Total	6,962	19,470	793

RAILROADS OF NEW HAMPSHIRE.

Subjoined is a statement of the cost, earnings, etc., of the railroads of New Hampshire, from the opening of the Concord Railroad in 1842, to the present time. It presents a complete summary of the operation of all the railroads in the State, for a period of 16 years. The railroads running into this State, but lying chiefly in other States, are not included,—an account of these more properly coming under a description of railroads of other States.

The total aggregate expenditure upon all the railroads in the State at the date of the annual report of the Railroad Commissioners in June last, adding together that for the several years, has been $158,412,974. The total gross earnings have been, $16,631,301; the current expenses, $9,367,459; net earnings, $7,260,267. Receipts from passengers, $6,176,991; receipts from freight, $9,284,760; receipts from mails, etc., $563,050.

The rate of gross earnings to cost has been about 11 per cent.; net, was nearly 5 per cent. A better result would have been shown, had the railroads lying partially in the State, such as the Nashua and Lowell, and Boston and Maine, been included. The reason why so few dividends have been paid, has been due to the embarrassed state of the finances of the companies, rather than to a lack of earnings.

RECAPITULATION

Showing the cost, earnings, etc., of the New Hampshire Railroads, from the opening of the Concord Railroad to the present time.

Year.	Length.	Cost.	Gross Receipts.	Current Expenses.	Net Receipts.	Receipts from Passengers.	Receipts from Freight.	Receipts from Miscellaneous.
1842	35	$725,059	$70,912	$27,184	$43,728	$48,034	$21,808	$1,068
1844	35	742,223	139,080	65,167	73,913	72,799	65,420	660
1845	35	756,444	181,842	82,929	98,913	90,545	90,099	1,196
1846	35	779,581	228,479	135,055	93,424	109,971	115,469	3,036
1847	35	1,042,718	290,228	176,453	113,774	133,544	141,117	15,568
1848	158	4,819,771	494,020	290,143	228,877	218,201	260,780	15,078
1849	171	6,764,402	776,932	316,194	416,738	321,200	428,759	17,972
1850	320	10,802,640	1,114,160	563,896	550,449	497,153	577,019	39,980
1851	393	12,453,732	1,117,342	558,463	562,074	502,227	568,252	49,154
1852	440½	14,252,832	1,307,123	656,476	620,545	539,920	690,746	44,964
1853	487½	16,242,119	1,600,859	869,492	741,366	610,030	906,077	54,348
1854	531	17,064,659	1,873,140	1,069,594	827,114	677,129	1,082,915	60,181
1855	532½	17,864,792	2,044,716	1,184,108	860,993	660,266	1,190,575	62,787
1856	538½	18,205,116	2,009,009	1,301,302	707,699	624,942	1,163,652	66,838
1857	539	18,444,634	1,717,474	1,079,776	637,696	524,749	990,583	54,718
1858	539	17,431,961	1,672,152	1,001,237	663,065	547,280	1,004,529	75,360
	4,825	$158,412,974	$16,631,301	$9,367,459	$7,260,269	$6,176,991	$9,284,760	$563,050

COAL MINES OF NEW SOUTH WALES.

The production from 10 mines in 1851 was 67,610, and in 1852, 67,404 tons; from 13 mines in 1853, 96,809; from 12 mines in 1854, 116,-642; and from 14 mines in 1855, 137,076 tons.

TURK'S ISLAND.

SALT EXPORTED.

1849	1,407,722	bushels.
1850	1,169,402	"
1851	286,422	"
1852	1,061,776	"
1853	827,808	"
1854	1,021,900	"
1855	391,584	"
1856	674,940	"

			Tons.		
1856—Exp's	£27,064	Cleared	26,603	Exp. duty	£703
Imp's	33,523	Entered	28,006	Imp. "	3,892
				Other	1,211
					£5,806
Expenditures					£6,124

COMMERCE OF HUDSON'S BAY TERRITORY.

Value of exports from H. B. Territory, in 1854, £209,914; in 1855, £198,626; and in 1856, £318,554. Value of imports from Great Britain in 1854, £102,784; in 1855, $82,963; and in 1856, £110,049: and from colonial possessions in 1854, £9,922; in 1855, £10,645; and in 1856, £15,921.

COMMERCE OF THE NEW YORK CANALS.

Subjoined will be found a series of tabular statements, prepared by the Auditor of the Canal Department, showing the total tonnage of all the property on the canals, ascending and descending, its value, and the amount of tolls collected for the twenty-three years preceding:

Year.	Tons.	Value.	Tolls.
1836	1,310,807	$67,634,343	$1,614,342
1837	1,171,276	55,809,288	1,292,623
1838	1,333,011	65,746,559	1,590,911
1839	1,435,713	73,390,764	1,616,382
1840	1,416,046	66,303,892	1,775,747
1841	1,521,661	92,202,929	2,084,882
1842	1,236,931	60,016,608	1,749,196
1843	1,513,439	76,276,909	2,081,590
1844	1,816,586	90,921,152	2,446,374
1845	1,985,011	100,553,245	2,646,181
1846	2,268,662	115,612,109	2,756,106
1847	2,869,810	151,563,428	3,635,381
1848	2,796,230	140,086,157	3,252,211
1849	2,894,732	144,732,285	3,268,226
1850	3,076,617	156,397,929	3,273,899
1851	3,582,733	159,981,801	3,329,727
1852	3,863,441	196,603,517	3,118,244
1853	4,247,852	207,179,570	3,204,718
1854	4,165,862	210,284,312	2,773,566
1855	4,022,617	204,390,147	2,805,077
1856	4,116,082	218,327,062	2,748,203
1857	3,344,061	136,997,018	2,045,641
1858	3,665,192	138,568,844	2,110,754

The total tons coming to tide-water from Erie and Champlain canals for each of the last twenty-five years, and the aggregate value thereof in market, was as follows:

Year.	Tons.	Value.
1834	553,596	$13,405,022
1835	753,191	20,525,446
1836	696,374	26,932,470
1837	611,781	21,822,354
1838	640,481	23,038,510
1839	602,128	20,163,109
1840	669,012	29,213,573
1841	774,334	27,225,322
1842	666,626	22,751,013
1843	836,861	28,453,408
1844	1,019,094	34,183,167
1845	1,204,943	45,452,321
1846	1,362,319	51,105,256
1847	1,744,283	73,092,414
1848	1,447,905	50,883,907
1849	1,579,946	52,375,521
1850	2,033,863	55,474,637
1851	1,977,151	53,927,508
1852	2,234,822	66,893,102
1853	2,505,797	73,688,044
1854	2,223,743	72,120,691
1855	1,895,593	74,377,937
1856	2,123,469	74,286,734
1857	1,617,187	51,190,018
1858	1,985,142	61,536,061

The following table shows how much of the tolls received in each year of navigation was on "products from Western States," how much was on "products of this State," and how much was on "merchandise going from tide-water."

Year.	Tolls on agricultural and other products.		Merchandise from tide-water.	Total on all canals.
	From other States.	From this State.		
1835	$153,063	$884,049	$510,997	$1,548,109
1836	211,750	853,022	549,564	1,614,336
1837	160,116	723,756	408,751	1,292,623
1838	247,241	803,967	539,703	1,590,911
1839	310,072	756,723	549,587	1,616,382
1840	427,480	865,758	482,510	1,775,778
1841	500,630	924,326	609,927	2,034,883
1842	467,792	827,841	453,565	1,749,198
1843	623,297	892,151	566,142	2,081,590
1844	676,032	1,088,274	682,068	2,446,374
1845	677,922	1,240,678	727,582	2,646,182
1846	1,013,478	1,100,699	641,929	2,756,106
1847	1,583,500	1,213,761	837,943	3,635,204
1848	1,157,905	1,213,060	881,402	3,252,367
1849	1,101,860	1,261,229	905,137	3,268,226
1850	1,137,731	1,222,877	913,291	3,273,899
1851	1,251,390	1,027,124	1,051,213	3,329,727
1852	1,304,018	1,013,990	799,650	3,118,244
1853	1,383,422	945,968	875,328	3,204,718
1854	985,647	1,007,847	780 072	2,773,566
1855	1,148,098	857,359	799,620	2,805,077
1856	1,247,765	743,668	756,770	2,748,203
1857	899,380	674,057	472,204	2,045,641
1858	944,109	888,259	278,386	2,110,754

The whole quantity of wheat and flour which came to the Hudson River, from 1834 to 1858, inclusive, with the aggregate market value of the same, and the amount of tolls received on all the wheat and flour transported on the canals in each year, from 1837 to 1858, inclusive, is as follows:

Year.	Tons.	Value.	Tolls.
1834	130,452	$5,712,795	Not ascer'd.
1835	128,552	7,395,939	do
1836	124,982	9,796,540	do
1837	116,491	9,640,156	$301,739
1838	133,080	9,833,586	380,161
1839	124,683	7,217,841	404,525
1840	244,862	10,362,862	700,071
1841	201,360	10,165,355	921,046
1842	198,231	9,284,778	606,727
1843	248,780	10,283,454	731,816
1844	277,865	11,211,677	816,711
1845	320,463	15,962,950	851,533
1846	410,366	18,836,412	1,099,325
1847	551,205	32,890,935	1,460,424
1848	431,641	21,148,421	1,126,133
1849	434,444	19,308,595	1,128,064
1850	461,781	20,218,188	1,114,519
1851	457,624	16,487,652	867,881
1852	576,772	22,564,256	995,160
1853	618,858	30,034,571	998,962
1854	240,655	18,482,377	363,763
1855	301,125	23,163,681	548,946
1856	475,385	29,098,973	709,640
1857	263,141	14,043,581	456,350
1858	454,831	19,632,087	529,254

CONSUMPTION OF COTTON IN EUROPE.

The average weekly consumption of cotton in Europe, according to Ellison's "Hand-Book of the Cotton Trade," amounted, in 1854, to 47,277 bales, and in 1857, to 63,530, but in 1856 the consumption averaged 71,043 bales, the highest rate ever before attained. The increase in the 8 years ending with 1857, over the consumption of 1850, was thus: 16,253 bales, or 34.4 per cent.; and the increase from the lowest to the highest rate, 23,765 bales, or 50.3 per cent. The statistics of consumption for the years severally, distinguishing that of the United Kingdom and of the Continent, are—

	United Kingdom.	Continent.	Total.
1850	29,125	18,152	47,277
1851	31,988	18,939	50,927
1852	35,790	25,437	61,227
1853	36,613	23,093	59,706
1854	37,829	22,440	60,269
1855	40,403	23,535	63,938
1856	41,987	29,055	71,042
1857	39,065	24,465	63,530
1858	41,333	.....	.....

And if the consumption on the continent in 1858 has been in proportion to that of the United Kingdom in that year, the total will have been about 70,000 bales.

The weekly consumption in the countries of Continental Europe, for the year 1850, and the seven subsequent years ending with 1857, has been annually as follows:

France—7,077, 7,173, 10,575, 9,018, 8,500, 9,211, 10,115, 8,596 bales.

Belgium—1,134, 1,115, 1,634, 1,538, 1,346, 1,211, 1,533, 1,096 bales.

Holland—1,038, 1,038, 1,365, 1,173, 1,653, 1,711, 1,903, 1,883 bales.

Germany—1,653, 2,115, 2,442, 2,769, 3,981, 4,057, 4,750, 4,142 bales.

Trieste—2,282, 2,211, 2,596, 1,981, 1,788, 1,653, 1,865, 1,442 bales.

Genoa, Naples, etc.—558, 596, 942, 980, 807, 1,096, 2,115, 1,730 bales.

Spain—1,481, 1,768, 1,826, 1,634, 1,788, 2,192, 2,346, 1,730 bales.

Russia, Norway, etc.—2,923, 2,923, 4,057, 4,000, 2,577, 2,404, 4,423, 3,846 bales.

The total annual consumption in Europe for the eight years embraced; the exports of cotton from the United States for the same years, and the total that must have been supplied from other sources than the United States—are shown in the annexed table:

Years.	Total Consumption.	Supplied by the U. States.*	Supplied from other Sources.
1850	2,458,404	1,444,049	1,014,355
1851	2,648,204	2,093,720	554,484
1852	3,183,804	2,484,615	699,189
1853	3,104,712	2,526,296	578,412
1854	3,133,988	2,245,075	888,913
1855	3,324,776	2,303,403	1,021,373
1856	3,694,184	2,991,175	703,009
1857	3,303,560	2,265,588	1,037,972

From this table it would appear that in the eight years employed in illustration, the average annual consumption in Europe is 3,106,454 bales; the average annual supply from the United States, 2,294,240 bales; and the average annual supply from all other sources, 812,214 bales.

Among the sources other than the United States, the most important is British India. In 1840 the latter country supplied to the United Kingdom 77,011,839 pounds of cotton, but in 1857 not less than 250,338,144. This shows an increased production between the two periods of 225 per cent. In the same 18 years the exports of cotton from the United States has risen from 743,941,061 pounds, to 1,048,282,475 pounds, or 40.9 per cent. Thus it appears that the rate of increase in India has been six times as great as in the United States.

* In reducing the quantity to bales, in the first 5 years, the pounds are divided by 440, which has been considered as a fair average. The three last years are official.

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